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GSA TODAY

THE GEOLOGICAL SOCIETY OF AMERICA®

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Geology in an Online World

Science Editor Openings for 2022

GSA seeks applications for science co-editors for *GSA Today*, *GSA Bulletin*, *Geology* (one position each), and *Geosphere* (two positions). The four-year terms begin 1 January 2022. Duties include: ensuring stringent peer review and expeditious processing of manuscripts; making final acceptance or rejection decisions after considering reviewer recommendations; and, along with your co-editors, setting the editorial tone of the journal and maintaining excellent content through publication of a diverse range of papers.

POSITION DETAILS

GSA Today editors can expect to handle papers on a wide range of topics, and editors are also responsible for soliciting submissions of papers they feel would be of interest to GSA members and other readers. Areas of expertise that best complement the continuing editor include, but are not limited to: surface geology; modern processes; climate issues; environmental concerns.

Geosphere editors should be broadly interdisciplinary with specialization in a range of possible disciplines, such as: volcanology; magmatism; igneous petrology; geochemistry; geochronology; sedimentary geology; stratigraphy; planetary geology; geoscience education.

Research interests that complement those of the continuing *GSA Bulletin* editors include, but are not limited to: deformation; petrology; sedimentary geology; stratigraphy; geochemistry; marine geology; neotectonics; planetary geology; Precambrian geology; tectonics; tectonophysics; high-T thermochronology.

Geology editors should expect to handle 200–250 manuscripts each year, with ~35 active manuscripts on any given day. Research interests that complement those of the continuing editors include, but are not limited to: deformation; geodynamics; petrology; Precambrian geology; structural geology; tectonophysics; accessory minerals; economic geology; geochemistry–high-T isotopes; high-T geochronology.

Editors work out of their current locations at work or at home. The positions are considered voluntary, but GSA provides an annual stipend and funds for office expenses.

Evaluation Process: The GSA Publications Committee will evaluate applications and make its recommendations to GSA Council based on the combination of how a candidate's disciplinary expertise fits with the needs of the journal and on the candidate's application, which should provide documentation of the required and preferred qualifications listed here.

GSA affirms the value of diverse scientific ideas and the connection between diverse scientific ideas and a diverse group of contributors of those ideas. Accordingly, GSA welcomes applications from all qualified persons and encourages applications that highlight diversity.

To Apply: In a single PDF, submit your curriculum vitae and a letter of application that demonstrates how your interests and experience fulfill the required and preferred qualifications listed below to Jeanette Hammann, jhammann@geosociety.org. **Deadline: 1 March 2021.**

REQUIRED QUALIFICATIONS

- Experience as an editor or associate editor for a geoscience journal. Include details of the duties and duration of the position(s) held.
- Demonstrated expertise in two or more fields in the geosciences or in interdisciplinary fields broadly related to the geosciences.
- Demonstrated experience handling a significant editorial workload and ability to make timely decisions.
- Because of the breadth of topics covered in GSA journals, the applicant must clearly express willingness to handle papers outside of their main disciplines.
- Demonstrated ability to communicate clearly and be responsive to author needs

PREFERRED QUALIFICATIONS

- Experience with a GSA journal as a reviewer, associate editor, or editor.
- Breadth of interdisciplinary experience to complement that of existing editors; demonstrated interest in interdisciplinary research.
- International reputation and connections with the geoscience communities.
- Interest in encouraging innovation; willingness to take risks.
- Ability to support a positive team dynamic; ability to work with GSA staff and other editors to enhance the reputation of the journal.

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Cover: Students at the University of Kansas Field Camp using tablets running the StraboSpot Geologic Data System. From left to right: Julie Sophis (teaching assistant), Shannon Warren, and Jordan Kangogo. Image courtesy Univ. of Kansas, taken by KU Marketing Communications photographer Andy White. See related article, p. 4–7.

GSA NEWS

Erratum: The cover photo caption for the January 2021 issue of *GSA Today* was misidentified as Steens Mountain. The photo accompanying the science article by Victor E. Camp and Ray E. Wells shows Abert Rim, 30 km north of Lakeview, Oregon, USA. Description: The break in slope is coincident with a discontinuity representing a regional three- to five-million–year hiatus separating two distinct styles of volcanic activity in the Cascadia backarc region. The lower slope is composed of high-K calc-alkaline lavas derived from melting of a hydrated mantle source from 30 to 20 Ma. The steeper upper slope is composed of thin flows of the tholeiitic Steens Basalt (early lavas of the Columbia River Basalt Group) derived from melting of a dry mantle source with a plume component at ca. 17 Ma. *GSA Today* regrets this error.

Geology in an Online World

J. Douglas Walker

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INTRODUCTION

The earth sciences, all sciences, are doing more and more of their activities online. Although moving online was previously a well-established trend, the COVID-19 crisis has accelerated this, as faculty, teachers, and students came to understand all too well during 2020. Ordinary activities, such as field trips, field camps, and even professional meetings like GSA 2020 Connects Online, have moved mostly online (Tikoff et al., 2020). We have had to devise new ways of teaching that are entirely outside of our experience. Rather than wistfully wishing for a return to times past, the current situation is an opportunity to explore change and depart from our old ways of doing things, striving to make our science and our geology richer to each other. Returning to and reliving the past is what we do in our geology, but it should not be what we do as geologists and scientists.

At the same time, it is becoming more critical for earth scientists, and all scientists, to better engage the public and stakeholders in their work, their data, and their insights and conclusions. We have been facing not only a pandemic of disease but also a pandemic of climate change accompanied by the malady of denying science. Because the subject of geology is our shared planet and environment, geoscientists can present much of their work in a way that is relevant to the public. We have an advantage in that the public can see what we do, look directly at what we study, and appreciate where samples come from for our analyses. The basis of our science surrounds us. The online world further opens our science, whether in geologic maps, pictures of thin sections of rocks, or a numerical age for a sample, to general observation. This new openness and connectedness can give us the power of remote participation and access.

WHAT IS DRIVING THIS?

Besides the current pandemic, what are the forces driving this change? One easy answer is that we can connect more easily to each other and resources. Connectivity is critical and foundational. It is a revolution we have been living for a long time.

Mobile devices connected to the Internet give the user access to data and information almost anywhere and anytime. You can look up references in the field or the lab. You can ask questions and instantly get answers and sometimes expert advice. In most cases, you can use cloud resources and computing power. We all know that access to language translation is available almost anywhere, not because we have a translator or program installed on our devices, but because we employ cloud and server resources by passing small amounts of information. The heavy lifting of translation is done on the other end and then communicated back to us in a compact and useful form.

However, not only do we have more and more advanced connectivity, but we all carry with us computers, in something weighing just a few ounces, that have vastly more power than was contained in desktops and computing centers just 30 years ago. Not only are mobile devices such as phones and tablets powerful computers, but they are also integrated with cameras, LiDAR, GPS, magnetometers, and accelerometers, again of capabilities unobtainable in such compact and digital forms until recently. We now have ways to collect data that we did not in the past. In his presidential address to the Geological Society of America, "New Technology; New Geological Challenges," Clark Burchfiel (2004) made a compelling case that the geological community must embrace new modes of data collecting. When Burchfiel gave his address, precise GPS measurements were revolutionizing active tectonics and opening entirely new avenues of research. Today, developing and adopting new mobile technology can advance our ability to perform basic geology at the individual level, beyond the unprecedented connectivity.

GSA has led the charge for mobile computing and mobile devices in field geology and geology in general. Just looking at the last few years of *GSA Today* shows the Society and its members' emphasis on using phones and tablets in research and education, with articles about virtual rocks by De Paor in 2016, augmented reality by Bursztyn et al. in 2017, and data collection from images by Glazner and Walker in 2020. *Geosphere* has also become an outlet for much information on mobile devices and geology (Pavlis et al., 2010; Walker et al., 2019). GSA and its members are developing applications and best practices for collecting data in the field unobtainable with earlier technologies.

Another enormous influence on how we work is the move toward open access (see the impact on GSA [GSA, 2020]). Scientists of all kinds are under pressure to make their data and papers available to the general public and other scientists. This pressure is intensifying and, shortly, will fundamentally change how we work with journal articles, whatever those turn out to be in the future.

Although the access to consume information and data will be open, we must remain vigilant that the science we produce is vetted and reliable. Publishing scholarly articles is a process that GSA does well, and our journals are respected and provide trusted information. Much of this is based on the peer-review process. It is tempting in the online world to post information before it is ready or reviewed. All data online look alike to the person who is not a trained scientist or does not appreciate the scientific method. Even experienced scientists may have difficulty separating the wheat from the chaff.

Our ideas and conclusions must be open and rely on a careful review process before they are "published." Furthermore, published today and in the future no longer means showing up in your mailbox in a magazine. Although anyone, anywhere can post an article online, those connected with GSA should remain of the highest quality.

We should not fear airing controversial and challenging ideas if well-posed. On the other hand, we should not give refuge to those wanting to publish wrong or incorrect findings. GSA cannot become an online avenue for climate change or evolution deniers to peddle misinformation and lies. It is ok to say something is incorrect based on our methods and judgments as scientists.

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SOME GUIDING PRINCIPLES AND IDEAS

What are some of the needs to move forward with online information and preserve it through GSA? GSA is doing an excellent job of making its members' work available. These contributions are at the heart of what the Society is about. We have established paths for open access for our journal articles. Along with the papers, though, we have to view the underlying data and observations as essential resources. It is being able to put our hands on the combination of ideas and the data presented by researchers that forms the infrastructure of much of modern science. We view this as a cyberinfrastructure that forms the highways for data and the onramps and offramps for ideas.

Let's start by considering the primary data we collect, whether it is samples, maps, or measurements. Again, my discussion is partly but not wholly referenced to field data. A popular way of talking about data is asking whether it is FAIR—findable, accessible, interoperable, and reusable. These qualities and the FAIR principle have been fully articulated and written down only in the last five years (Wilkinson et al., 2016) but have guided much of the way we work with information for a long time.

I think of the idea of FAIR in somewhat different terms using statements developed during NSF-funded workshops on cyberinfrastructure and geoinformatics in the middle 2000s. Out of one workshop about evaluating a national geoinformatics community organization came the following statements about the scientific and public needs surrounding data and publications.

I can't integrate what I can't find;
I can't use something I don't understand;
I don't want to use something I don't trust;
I can't use something that isn't there anymore.

I think these statements give FAIR a more human or individual level to scientists and anyone wanting to read or understand or use scientific data. These statements also cover all cases of using cyberinfrastructure for research or teaching or self-education. They represent the concerns of the typical user.

What should GSA be doing to address these concerns and be FAIR? We should look at our current activities as a professional Society in light of the statements made above. We must also remember that a lot of our science starts with field data and products and builds from there.

1. I cannot find it. Making information findable is a fundamental goal. We need to ensure that search results are thorough and relevant and as complete as reasonable. GSA may not lead in this aspect, but we already organize data and maps, and we contribute directly and indirectly to indexing by GeoRef and Google. Along with other societies and organizations such as the USGS, GSA must continue to make our products organized and well described.
2. I cannot understand it. GSA can take the lead by bundling resources for teaching and research, along with all its data and information. Such activities in the past were singled out as education and outreach but should be integrated into publications and searches. This is an extra effort but can expand the reach of our scholarly products.
3. I do not trust it. GSA is in an excellent position to deal with trust because it is known for its peer review and publications. We cannot rest on these accomplishments but must build to the future with data-reporting standards with an eye for reusing data in the future. GSA should be a leader in setting community standards for data reporting. In that way, we serve all needs, and the GSA imprimatur assures the highest quality.
4. Data and information disappeared. This is always an area of worry that stems from the fact that no one wants to be responsible for keeping data in perpetuity (whatever that means). Some of the mechanics behind this should not be a concern. We accept on a daily basis that cloud technologies make it possible to preserve our very important information. There is also a worry about whether the data will be readable in the future. However, this seems less of a problem now that we have serialization protocols like JSON and GeoJSON that should be long-lived and easily parsed. We can deposit code and data structures in places like GitHub and schema.org.

However, geology is different from other sciences in that a critical component of our data is knowing *why* it was collected; we can call this the purpose. We collect data and make observations for some reason. Any specific purpose will mean that there will be some bias in data collection. For example, I was asked by a friend in grad school who was studying engineering whether I had a picture of jointed rocks. I did not remember at the time ever taking one, but told him I would look. It turns out that every picture I had taken as a geologist was of jointed rocks. GSA can take the role of understanding this observation and filtering bias. Considering a study's purpose leads to a fifth statement:

I need to know why these data were collected.

Our activities for these five statements must not be limited to just field data and studies. GSA should be willing to take the lead in almost any area of geology. GSA has a scientific Division structure that is suited to this purpose. We have Divisions for structural geology and tectonics, geoinformatics, sedimentary geology, and geochronology, to name a few. These groups can and should take the leading roles on *trust*, *understanding*, and *purpose*. GSA can team with other organizations to make things *findable* and *preserved*.

What are the most problematic aspects of the process and these activities? The first is finding a way to maintain what you have, and we will call this sustainability. The second is knowing when you have done enough. GSA can play a pivotal role in addressing both issues.

Sustainability is a fundamental problem. As a learned society, how do we preserve our efforts and keep our data for a long time in the online world? This is not worrying about storage and retrieval minimized by cloud resources, standard protocols for electronic storage, and robust data structure formats, but is the process's organizational oversight. Two things are necessary: Someone has to keep attentive to storing the information, and some group needs to ensure that the standards for data reporting change as the science and reasons for study change. GSA can take a leading role in these. We have published the *Geological Society of America Bulletin* for the past 133 years. Surely we can contemplate keeping electronic resources going for the next few decades. Just as we did not print our journals in-house, we will not store our information in-house but will work with experts in the field dedicated to this goal. GSA members organized under the scientific Divisions can keep up with cutting-edge data collection and reporting needs in different fields. This is essentially part of the peer-review process but could be taken on more fully and explicitly by the Society.

So who pays for storage and maintenance? Cost is always the most pressing question and one that has not found a good answer. At present, the National Science Foundation is funding research on preservation, interoperability, and community engagement in its EarthCube program and building cyberinfrastructure in computer sciences. While these programs foster cutting-edge scientific and engineering developments, they are not scalable or sustainable for

long-term efforts. That is not their mission. GSA can lead those efforts. Through its membership, its status as a professional organization, and its nonprofit foundation, we should develop a strategy for long-term sustainability.

This does not mean that GSA pays for all of the efforts. Instead, *can* we foster leadership with other groups to move forward, much in the way that the GeoScienceWorld effort was spearheaded by GSA and AAPG and has changed the way the Society monetizes its publications? The final result will almost certainly be some sort of private-public or non-profit–for-profit partnership. This model works well for other infrastructures, like highways and utilities, and nonprofit organizations like GSA and companies like Brunton. We will not know how to do this or what it will look like until we try.

The second is knowing when to stop. In this, I am reminded of the saying, "perfection is the enemy of good" (Voltaire [1764], *in* Ratcliffe [2011]). In the case of data and reporting it, perfection can become a barrier to any progress. Geology and its descriptions are based on words. Words mean things, but they can mean very different things to different people. In our case, the Pareto principle or 80–20 rule means that 80% of our effort is explained by 20% of our terms. We can never capture every sense in which a word has been used. Our best path is to figure out how terms are mostly used. Terms are metadata in many ways, and usage is at the heart of trust and understanding. It is a basis for being FAIR. Knowing how words are used also rests in understanding why someone collected the data in the first place. GSA should be *the* international professional association that works with the earth sciences community on this critical metadata and articulates the ontologies that reflect the science's meaning and context.

INTENDED AND UNINTENDED CONSEQUENCES

The online world is where we are going to live and work. Embracing this reality and recognizing that mobile devices will be used increasingly in the field for data collection and knowledge summary will build much better science. Some of the best intentional outcomes of this are clear and important.

1. We can make our research more repeatable and transparent. Access and rich data collection will allow anyone to examine field relations or all of the thin sections or models used by a researcher. All field observations can carry location information and images, thereby giving full context and content.
2. We can engage the citizen scientist. As has already been done in many fields, we should bring the citizen scientist into our work. Some geology can undoubtedly be crowdsourced, and engagement makes our science more real and less intimidating. What would happen if we crowdsourced the modal compositions of rocks, with data preserved and reviewable, using a mobile app such as StraboTools?
3. We can better get reliable information to the general public. We can use open-access journals and open data to showcase our science to the public and bring our field experiences to them. This way, nothing is hidden or unrevealed. Full access may make consuming and appreciating science more attractive and palatable to the public.

Working with citizen scientists and the public is where we have great opportunities. Modern science seems mysterious and daunting. Just 50 or 100 years ago, you could get out of high school, understanding much of the basic science and math for how you lived, and know how things worked from a light bulb to a car. Ordinary people could fix a car. This ability made science open, transparent, real, and very relevant. Now we deal more with computers, and the basic workings of things are harder for the public to grasp. We have gone from lenses, film, and photographic paper to computers and data storage. Indeed, images today use concepts such as the Fast Fourier Transform and data processing of sparse matrices, subjects developed only in the last few decades. Understanding digital images requires the physics and math most folks take after their freshman year in college. This reality makes even simple, everyday tasks difficult to understand by most people. Opening our science will allow others to peer deeper into and understand better what we do. By exposing our work, perhaps we can make inroads to understanding and trust by the public.

Technology and online geology are also a way to enhance access, diversity, and inclusion by relying less on or modifying the field setting. In an excellent paper in *GSA Today* this September, Whitmeyer et al. (2020) gave compelling examples of how living in the online world and using mobile technologies can vastly expand access and inclusion. Our science's quality increases immensely with such efforts and can be taken to groups previously excluded from field research. The techniques developed address accessibility and inclusion and make it possible to share and involve anyone interested in field geology, showing them the richness displayed by rocks, sediments, volcanoes, and geomorphology from the field. We should be able to foster the broadest possible participation regardless of the setting.

Not only are persons with disabilities poorly served by many of our activities, but so are Black, Indigenous, and People of Color. The geosciences lag significantly in the inclusion of People of Color in its disciplines. Some of this indeed resides in the emphasis on field geology and fieldwork so proudly and prominently displayed on our website and in our publications. While many of us, including me, are lured by the field and find it compelling, it is a hard sell to individuals who may be unsafe in remote and rural settings because of the color of their skin. Changing the safety aspect is something we are all responsible for but will take tireless and longtime work. However, changing the way field data and fieldwork becomes available is something we can and must do now (Anadu et al., 2020). Mobile technologies and online geology are a way to abolish these limits and make our science accessible to anyone.

SUMMARY

The Geological Society of America should seize this opportunity to lead the earth sciences forward with online efforts centered on scientific data and rigorous analysis. Creating an online community is a broad subject and requires us to participate in a wide range of activities. First, we must produce understandable and widely available outreach materials and couple them with our scholarly products. Second, through continued efforts at peer review and understanding reporting standards, our data and interpretations must continue to meet the geological community's requirements. Third, our work must be widely and seamlessly available through open access and open data (Bolukbasi et al., 2013). Last, we must preserve our efforts for future use and reuse by devising a funding and partnership model for the long-term preservation of digital information. In these ways, we can provide relevant, complete, and fact-based information to all curious and interested persons.

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CALL FOR NOMINATIONS

GSA Division Awards

ENERGY GEOLOGY DIVISION

Gilbert H. Cady Award

Nominations due 1 Mar.

Submit nominations to the Cady Award chair, which is the past Division chair.

The Gilbert H. Cady Award recognizes outstanding contributions in the field of coal geology that advance the science both within and outside of North America. **https://community.geosociety.org/energydivision/awards/cady**

Curtis-Hedberg Award

Nominations due 1 Mar.

Submit nominations to the Curtis-Hedberg Award chair, which is the past Division chair.

The award is made for outstanding contributions in the field of petroleum geology. **https://community.geosociety.org/energydivision/awards/curtishedberg**

GEOARCHAEOLOGY DIVISION

The Geoarchaeology Division awards, including application and nomination information, are online at **https://community.geosociety.org/geoarchdivision/home.**

Richard Hay Student Paper/Poster Award

Nominations due 1 Sept.

Submit nominations to gsa.agd@gmail.com.

This award is a travel grant for a student presenting a paper or poster at GSA's annual meeting. The grant is competitive and will be awarded based on the evaluation of the scientific merit of the research topic and the clarity of an expanded abstract for the paper or poster prepared by a student for presentation in the Division's technical session at the meeting.

Claude C. Albritton, Jr., Award

Nominations due 15 Mar.

Submit nominations to gsa.agd@gmail.com.

This award provides research scholarships and fellowships for graduate students in the earth sciences or archaeology. Recipients are students who have (1) an interest in achieving a master's or Ph.D. degree in earth sciences or archaeology; (2) an interest in applying earth-science methods to archaeological research; and (3) an interest in a career in teaching and academic research.

Rip Rapp Award

Nominations due 15 Feb.

Submit nominations to gsa.agd@gmail.com.

Nominations should include a biographical sketch, a statement of outstanding achievements, and a selected bibliography of the nominee. Award funds are administered by the GSA Foundation.

GEOINFORMATICS DIVISION

Outstanding Contributions in Geoinformatics Award

Nominations due 15 Feb.

This award will go to an individual who has contributed in an outstanding manner to geology through the application of the principles of geoinformatics. **https://community.geosociety.org/geoinformaticsdivision/awards**

GEOSCIENCE EDUCATION DIVISION

Biggs Award for Excellence in Earth Science Teaching

Nominations due 1 Mar.

This award recognizes innovative and effective teaching in college-level earth science. Earth-science instructors and faculty from any undergraduate academic institution who have been teaching full-time for 10 years or fewer are eligible (part-time teaching is not counted in this requirement). Award funds are administered by the GSA Foundation. **https://community.geosociety.org/gedivision/awards/biggsaward**

HISTORY AND PHILOSOPHY OF GEOLOGY DIVISION

Mary C. Rabbitt History and Philosophy of Geology Award

Nominations due 15 Feb.

Submit nominations to the Division's secretary/treasurer.

This award recognizes exceptional scholarly contributions of fundamental importance to our understanding of the history of the geological sciences. Achievements deserving of the award include, but are not limited to, publication of papers or books that contribute new and profound insights into the history of geology based on original research or a synthesis of existing knowledge. Award funds are administered by the GSA Foundation. **https://community.geosociety.org/histphildiv/awards/rabbitt**

Gerald M. and Sue T. Friedman Distinguished Service Award

Nominations due 15 Feb.

Submit nominations to the Division's secretary/treasurer.

This award recognizes exceptional service to the advancement of the knowledge of the history and philosophy of the geological sciences. Service to the history and philosophy of geology may include, but is not limited to, the discovery of and making available rare source materials; comprehensive bibliographic surveys; organizing meetings and symposia in the history and philosophy of geology; and exceptional service to the Division. Award funds are administered by the GSA Foundation. **https://community.geosociety.org/histphildiv/awards/dsa**

History and Philosophy of Geology Student Award

Nominations due 15 June

Submit nominations to the Division's secretary/treasurer.

The Division provides a student award in the amount of US$1000 for a paper to be given at the GSA annual meeting. The proposed paper may be (1) a paper in the history or philosophy of geology; (2) a literature review of ideas for a technical work or thesis/dissertation; or (3) some imaginative aspect of the history or philosophy of geology we have not thought of before. Award funds are administered by the GSA Foundation. **https://community.geosociety.org/histphildiv/awards/student**

LIMNOGEOLOGY DIVISION

Israel C. Russell Award

Nominations due 15 Mar.

Submit nominations to the Division treasurer, David Finkelstein.

This award recognizes major achievements in limnogeology through contributions in research, teaching, and service. **https://community.geosociety.org/limnogeologydivision/awards/russell**

Kerry Kelts Research Award

Nominations due 30 June

Submit nominations to the Division chair.

This award is for undergraduate or graduate student research related to limnogeology, limnology, or paleolimnology. **https://community.geosociety.org/limnogeologydivision/awards/kerrykelts**

MINERALOGY, GEOCHEMISTRY, PETROLOGY, AND VOLCANOLOGY (MGPV) DIVISION

MGPV awards emphasize achievements in geologic and multidisciplinary approaches. Geologic work is by nature generalistic and has an important field component, with Earth as the natural laboratory. More information is online at **https://community.geosociety.org/mgpvdivision/home.**

MGPV Distinguished Geologic Career Award

Nominations due 31 Mar.

This award recognizes distinguished contributions over the course of a career in one or more of the following fields of research: mineralogy, geochemistry, petrology, volcanology, with emphasis on multidisciplinary, field-based work. **https://community.geosociety.org/mgpvdivision/awards/dgca**

MGPV Early Career Award

Nominations due 31 Mar.

This award recognizes distinguished contributions by an individual near the beginning of his/her professional career in one or more of the following fields of research: mineralogy, geochemistry, petrology, volcanology, with emphasis on multidisciplinary, field-based contributions. Nominations are restricted to those who are within eight years past the award of their final degree. **https://community.geosociety.org/mgpvdivision/awards/earlycareer**

PLANETARY GEOLOGY DIVISION

Shoemaker Award

Nominations due 19 Aug.

This award is for undergraduate or graduate students, of any nationality, working in any country, in the disciplines of geology, geophysics, geochemistry, astronomy, or biology. The award, which will include US$2500, is to be applied to the study of impact craters, either on Earth or on the other solid bodies in the solar system. **https://community.geosociety.org/pgd/awards/shoemaker**

Ronald Greeley Award for Distinguished Service

Nominations due 30 June

This award goes to those who have rendered exceptional service to the Planetary Geology Division (PGD) for a multi-year period. Nominations may be made by any PGD member to the management board. **https://community.geosociety.org/pgd/awards/greeley**

QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

Farouk El-Baz Award for Desert Research

Nominations due 1 Apr.

Submit nominations to Anne Chin (anne.chin@ucdenver.edu).

This award recognizes excellence in desert geomorphology research worldwide. It is intended to stimulate research in desert environments by acknowledging an individual whose research has significantly advanced the understanding of the Quaternary geology and geomorphology of deserts. **https://community.geosociety.org/qggdivision/awards/el-baz**

Distinguished Career Award

Nominations due 1 Apr.

This award goes to a Quaternary geologist or geomorphologist who has demonstrated excellence in their contributions to science. **https://community.geosociety.org/qggdivision/awards/distinguished-career**

SEDIMENTARY GEOLOGY DIVISION

Laurence L. Sloss Award for Sedimentary Geology

Nominations due 15 Feb.

This award recognizes a sedimentary geologist whose lifetime achievements best exemplify those of Larry Sloss—i.e., achievements that contribute widely to the field of sedimentary geology and service to GSA. Award funds are administered by the GSA Foundation. **https://community.geosociety.org/sedimentarygeologydiv/awards/sloss**

Sedimentary Geology Division and Structural Geology and Tectonics Division Joint Award: Stephen E. Laubach Structural Diagenesis Research Award

Nominations due 1 Apr.

This award promotes research combining structural geology and diagenesis and curriculum development in structural diagenesis. The award highlights the growing need to break down disciplinary

boundaries between structural geology and sedimentary petrology. **https://community.geosociety.org/sedimentarygeologydiv/awards/laubach**
https://community.geosociety.org/sgt/awards/laubachaward

STRUCTURAL GEOLOGY AND TECTONICS DIVISION

Career Contribution Award

Nominations due 1 Mar.

This award is for an individual who throughout his/her career has made numerous distinguished contributions that have clearly advanced the science of structural geology or tectonics. **https://community.geosociety.org/sgt/awards/careercontribution**

Outstanding Publication Award

Nominations due 1 Mar.

This award recognizes a published work (paper, book, or map) of exceptional distinction that clearly advances the science of structural geology or tectonics. **https://community.geosociety.org/sgt/awards/outstandingpublication**

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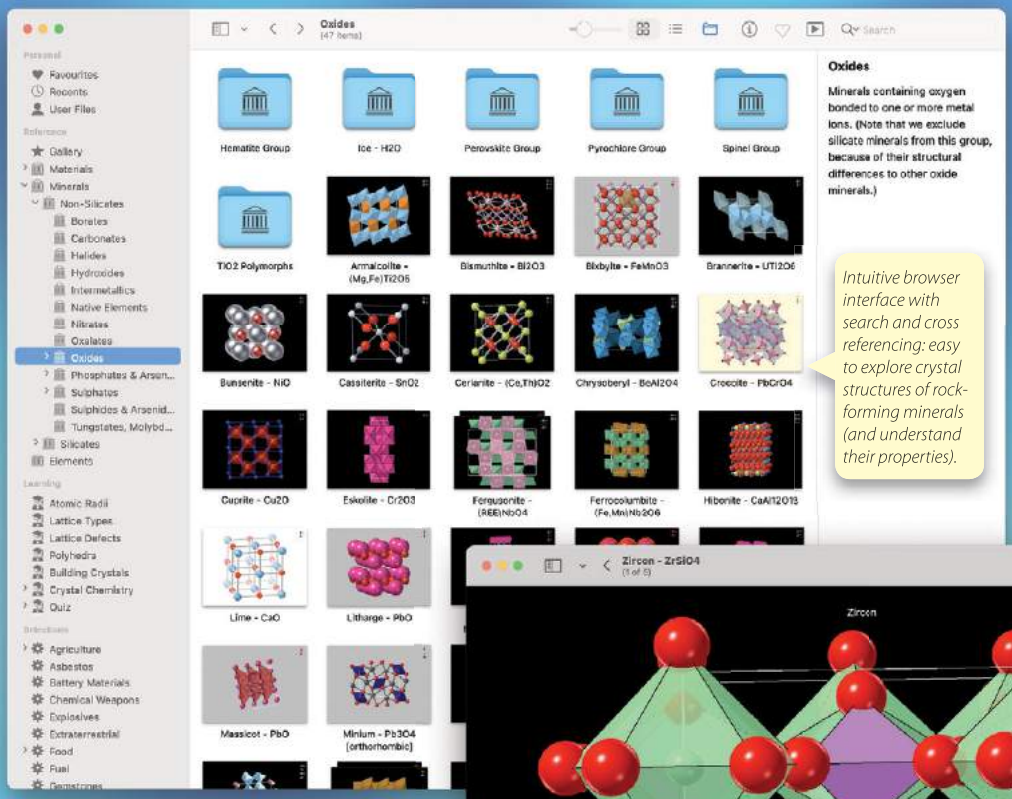

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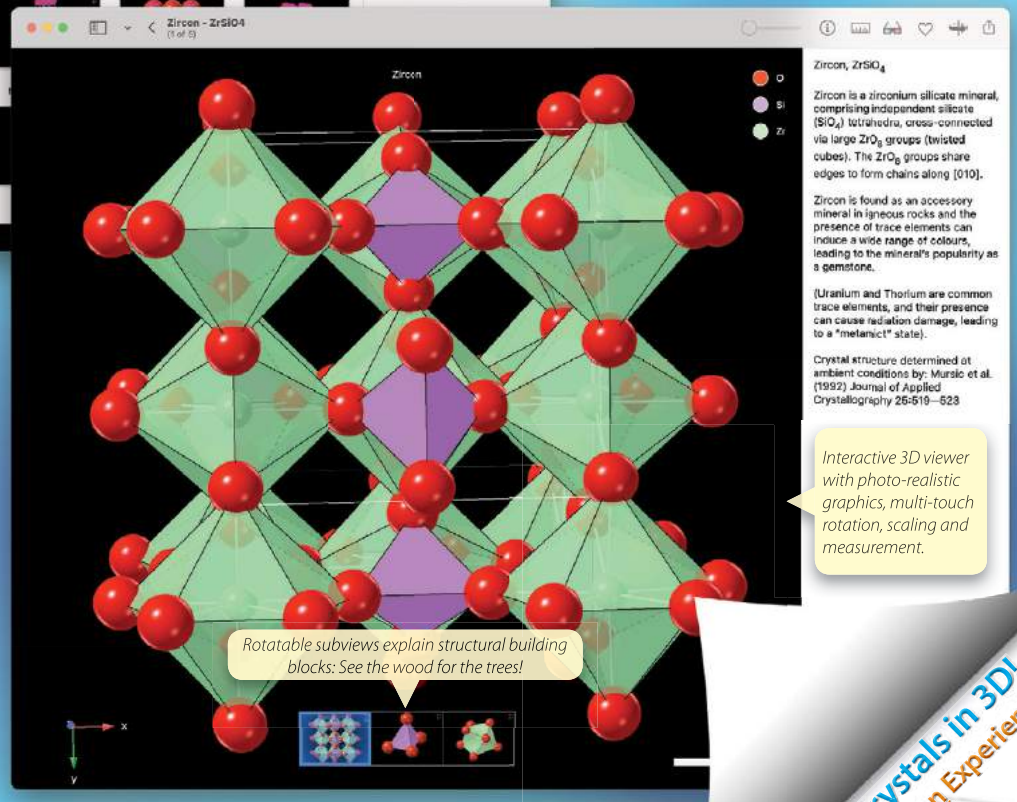

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2020 Outstanding Earth-Science Teacher Awards

The National Association of Geoscience Teachers (NAGT) has announced the 2020 Outstanding Earth-Science Teacher (OEST) Awards. This annual award recognizes excellence in earth-science teaching at the pre-college level. GSA awards the section recipients US$700 in travel money to attend a GSA meeting and complimentary membership in GSA for three years. State winners receive a one-year complimentary GSA membership. Learn more at **https://nagt.org/nagt/awards/oest/2020_oest.html.**

SECTION WINNERS

Central Section: Anthony Thomas
Eastern Section: Bonnie J Keller
Midcontinent Section: Angie Nelson
New England Section: Tara A. O'Brien
North Central: Spencer Cody
Pacific Northwest Section: Steven G. Tebor
Southeastern Section: Covey Ashe Denton
Southwest Section: Rachel Arbor

STATE WINNERS

Alabama: Katy Montgomery Souder
Kentucky: Cayeann Cowan
South Carolina: Heidi Haug
Virginia: Kristina Bartlett Brody
North Carolina: Covey Ashe Denton
Georgia: R. Scott Harris
Louisiana: Garrah Leshe
Pennsylvania: Donna G Kertis
West Virginia: Alicen Adkins
Florida: Zane Hurley
Tennessee: Kari Hughes
Mississippi: Emily Dill
New York: Kevin Nohejl

2021 Undergraduate Student Research Grants

Five of GSA's geographic Sections offer undergraduate research grants. Deadlines vary by Section, ranging from 1 March to 1 April.

https://www.geosociety.org/undergradgrants

J. David Lowell Field Camp Scholarships

GSA and the GSA Foundation are proud to announce that J. David Lowell Field Camp Scholarships will be available to undergraduate geology students for the summer of 2021. These scholarships will provide students with US$2,000 each to attend the field camp of their choice. Applications are reviewed based on diversity, economic/financial need, and merit.

Application deadline: 19 Mar.

Learn more at **https://www.geosociety.org/fieldcampawards.** Questions? Contact Jennifer Nocerino, jnocerino@geosociety.org.

THE GEOLOGICAL SOCIETY OF AMERICA®

2021 GSA Section Meetings

Northeastern

14–16 March
Online Meeting
https://www.geosociety.org/ne-mtg

The skyline of Hartford, Connecticut, as seen from across the Connecticut River. Image by Jimaro Morales from Pixabay.

Southeastern

1–2 April
Online Meeting
https://www.geosociety.org/se-mtg

William J. Samford Hall, Auburn University. The George F. Landegger Collection of Alabama Photographs in Carol M. Highsmith's America, Library of Congress, Prints and Photographs Division.

Joint North-Central/South-Central

18–20 April
Online Meeting
https://www.geosociety.org/nc-mtg

Downtown Springfield Park Central Square. Photo courtesy of the Springfield, Missouri, Convention and Visitors Bureau.

Cordilleran

12–14 May
Online Meeting
https://www.geosociety.org/cd-mtg

Volcanic geology of the Virginia Mountains, Nevada. Photo courtesy of Dr. Philipp Ruprecht, UNR faculty member.

Rocky Mountain

Meeting Postponed
until 2023

Pineridge Natural Area. Image by Jan Alexander from Pixabay.

FINAL ANNOUNCEMENT

Joint North-Central–South-Central Sections Meeting

55th Annual Meeting of the North-Central Section, GSA
55th Annual Meeting of the South-Central Section, GSA
18–20 April 2021

www.geosociety.org/sc-mtg

Photo courtesy of the Springfield, Missouri, Convention and Visitors Bureau.

Meeting of the Midcontinent: Geosciences from Canada to Mexico

The local committee and section management boards have decided to move the 2021 North-Central–South-Central Joint Section Meeting to 100% online in order to ensure everyone's health and safety and to not limit participation due to travel restrictions. The meeting will continue to have a diverse range of technical sessions, field trips, and student mentoring opportunities. The platform will emphasize creating as much interaction and communication among attendees as possible in an online environment. Please help us pass the word along so that we can generate a full meeting with great abstracts and presentations! Thank you for your continued support in creating a dynamic space for scientific exchange. Registration fees for all participants include full access to all field trips and workshops.

REGISTRATION

Early registration deadline: 15 Mar.
Cancellation deadline: 22 Mar.

For further information, please contact the local organizing chair, Doug Gouzie, douglasgouzie@missouristate.edu.

REGISTRATION FEES (all fees are in U.S. dollars)

	Early	Standard
Professional Member	$180	$240
Professional Member 70+	$110	$155
Early Career Professional Member	$130	$180
Professional Nonmember	$220	$280
Student Member	$75	$110
Student Nonmember	$100	$145
K–12 Professional	$50	$70

FIELD TRIPS

All field trips for this meeting are online. There is no fee for these field trips; the price is included in registration cost. For additional information, please contact the committee.

FT1. **Ordovician and Mississippian Stratigraphy in Southwestern Missouri.** Sat., 17 Apr. Principal organizer: Damon Bassett, Missouri State University, dbassett@missouristate.edu. Co-organizer: Charles Rovey, Missouri State University.

FT2. **Selected Features of the Big Four Springs Region of the Ozarks.** Sat., 17 Apr. Principal organizer: Sherri Stoner, Missouri Geological Survey, Sherri.Stoner@dnr.mo.gov. Co-organizers: Cecil Boswell, Missouri Geological Survey, Cecil.boswell@dnr.mo.gov; Bill Duley, Duley Environmental LLC, Bill.j.duley@gmail.com.

SHORT COURSES

There is no fee for these short courses; the price is included in registration cost. For additional information, contact the Short Course chairs.

SC1. **Getting Started with Drones and Structure from Motion Photogrammetry in Your Research and Teaching.** Sat., 17 Apr. Principal organizer: Toby Dogwiler, Missouri State University.

SC2. **Representing the Best You: Professional Development Workshop for GSA On to The Future!** Sat., 17 Apr. Principal organizer: Stephen K. Boss, University of Arkansas, sboss@uark.edu. Co-organizer: Tahlia Bear, Geological Society of America, tbear@geosociety.org.

SC3. **Using Project WET to Teach Earth and Environmental Science.** Sat., 17 Apr. Principal organizer: Janice Greene, Missouri State University/Missouri Project WET, JaniceGreene@missouristate.edu.

SC4. **Taking an Intersectional Approach to Understand and Address Gender Inequality in STEM Fields.** Sat., 17 Apr. Principal organizer: Abby Templer Rodrigues, Missouri State University, ATemplerRodrigues@MissouriState.edu.

OPPORTUNITIES FOR STUDENTS AND EARLY CAREER PROFESSIONALS

Career Mentoring Virtual Programs

GSA student members can ask career-related questions and learn about non-academic pathways in the geosciences while networking with professionals at the Roy J. Shlemon and John Mann Mentor Programs.

Career Workshop

This workshop will feature career development planning, an exploration of geoscience job sectors, and information on best practices for crafting a résumé and cover letter. Non-technical skills and workforce statistics will be reviewed. The series will be led by workshop presenters and geoscientists. No registration is required, and everyone is welcome.

To learn more about mentors and career workshops, go to **https://www.geosociety.org/mentors/** or contact Jennifer Nocerino at jnocerino@geosociety.org.

PROFESSIONALS

If you like to share your interest, enthusiasm, and experience in applied geology, consider being a GSA mentor. Being a mentor is a rewarding experience. To learn more, contact Jennifer Nocerino at jnocerino@geosociety.org.

This meeting also offers an excellent opportunity to earn CEUs toward your continuing education requirements for your employer, K–12 school, or professional registration. The CEU certificate can be downloaded from the meeting website after the meeting.

ORGANIZING COMMITTEE

Organizing Co-Chairs: Doug Gouzie, douglasgouzie@missouristate.edu; Mohamed Aly, aly@uark.edu
Technical Program Chair: Kevin Mickus, KevinMickus@missouristate.edu
Field Trip Co-Chairs: Matt McKay, matthewmckay@missouristate.edu; Greg Dumond, gdumond@uark.edu
Exhibit Hall/Sponsor Co-Chairs: Matt McKay, matthewmckay@missouristate.edu; Glenn Sharman, gsharman@uark.edu
Short Course Co-Chairs: Melida Gutierrez, mgutierrez@missouristate.edu; Melanie Carden-Jessen, mcardenjessen@missouristate.edu; Stephen Boss, sboss@uark.edu
Student Volunteer Co-Chairs: Damon Bassett, dbassett@missouristate.edu; Adriana Potra, porta@uark.edu
Judging Coordinator: Celina Suarez, casuarez@uark.edu

FINAL ANNOUNCEMENT

Southeastern Section

70th Annual Meeting of the Southeastern Section, GSA
1–2 April 2021

www.geosociety.org/se-mtg

William J. Samford Hall, Auburn University. The George F. Landegger Collection of Alabama Photographs in Carol M. Highsmith's America, Library of Congress, Prints and Photographs Division.

THE ONLINE MEETING FOR SEGSA-2021

The GSA Southeastern Section Meeting will be hosted online by Auburn University. The theme of the meeting is **"Advancing knowledge in the geosciences to understand Earth's past, present, and future."** In keeping with this theme, the technical program will be exceptionally broad and diverse, with topics ranging from planetary geology and Earth's origins to resilience in the context of environmental hazards and future strategies to mitigate climate change. The online format will allow maximum participation of all registrants and our generous meeting sponsors while increasing the scope of scientific content for symposia, technical sessions, and field trips while ensuring safety. The meeting will be exceptionally rich in its emphasis of geoscience education, with a strong emphasis on field instruction and student safety, and it will offer many opportunities for student participation and career mentoring. *Registration fees for all participants include full access to all field trips and workshops.*

REGISTRATION

Early registration deadline: 22 Feb.
Cancellation deadline: 1 Mar.

For further information or if you need special accommodations, please contact the general chair, Willis ("Bill") Hames, hameswe@auburn.edu or the technical program co-chairs, Karen McNeal, ksm0041@auburn.edu, and Kathryn Brown, ksn0006@auburn.edu.

REGISTRATION FEES (all fees are in U.S. dollars)

	Early	Standard
Professional Member	$150	$200
Professional Member 70+	$75	$100
Professional Nonmember	$175	$225
Early Career Professional Member	$120	$160
Student Member	$40	$60
Student Nonmember	$50	$70
K–12 Professional	$40	$50

FIELD TRIPS

There is no fee for these field trips; the price is included in the registration cost. For additional information, please contact the Field Trip chair, David T. King, Auburn University, kingdat@auburn.edu.

FT1. **CO_2 Storage in Geological Formations in the Southeastern USA.** Tues., 30 Mar. Richard A. Esposito, Southern Company, raesposi@southernco.com; Lauren Beckingham, Auburn University, leb0071@auburn.edu.

FT2. **A Late Cretaceous Paleodrainage System on the Coastal Plain Unconformity of Alabama-Georgia**. Wed., 31 Mar. Clint Barineau, Columbus State University, barineau_clinton@ columbusstate.edu; Diana Ortega-Ariza, Kansas Geological Survey, University of Kansas, dianalo@ku.edu.

FT3. **Are There Any Rocks Here Other Than Mylonites? A Virtual Field Trip to Honor the Career of Dr. Mark Steltenpohl.** Wed., 31 Mar. Joshua Poole, Wellborn Mining Inc., pooleus@gmail.com; Dane S. VanDervoort, Geological Survey of Alabama, dvandervoort@gsa.state.al.us; John Whitmore, Geological Survey of Alabama, jwhitmore@gsa.state.al.us; Randy L. Kath, University of West Georgia, rkath@westga.edu; Willis Hames, Auburn University, hameswe@auburn.edu.

FT4. **Georgia's Barrier Islands: Formation, Function, and Future.** Wed., 31 Mar. Robin McLachlan, College of Coastal Georgia, mclachlan.rl@gmail.com; James Deemy, College of Coastal Georgia, jdeemy@ccga.edu; Kimberly Takagi, College of Coastal Georgia, ktakagi@ccga.edu; Damon Gannon, University of Georgia Marine Institute, dgannon@uga.edu.

FT5. **Virtual Field Excursion to the Cretaceous–Paleogene Boundary Section, Moscow Landing, Western Alabama.** Fri., 2 Apr. Charles E. Savrda, Auburn University, savrdce@auburn.edu.

FT6. **Transect across an Early Paleozoic, Laurentian Suprasubduction System: Blue Ridge and Western Inner Piedmont of Alabama-Georgia.** Sat., 3 Apr. Clint Barineau, Columbus State University, barineau_clinton@columbusstate.edu; James Tull, Florida State University, jtull@fsu.edu; Ben Davis, Florida State University, bld13c@my.fsu.edu.

FT7. **An Undergraduate's First Field Experience: A Virtual Tour through the Carolinas, Georgia, and Florida.** Sat., 3 Apr. Laura Mulrooney, University of Florida, LMulrooney@ufl.edu; Victoria Pavlovics, University of Florida, vpavlovics@ufl.edu; Emily Sonnenberg, University of Florida, sonnenberge@ufl.edu; Jamie Good, University of Florida, jamiegood@ufl.edu; Anita Marshall, University of Florida, anita.marshall@ufl.edu; Ashlyn Spector, Rutgers University, ashlyn.spector@rutgers.edu; Nikita Kepezhinskas, University of Alberta, Kepezhin@ualberta.ca.

FT8. **Tectonism and Metamorphism along a Southern Appalachian Transect across the Blue Ridge and Piedmont.** Sat., 3 Apr. Harold Stowell, University of Alabama, hstowell@ua.edu; Elizabeth Bollen, University of Alabama, embollen@crimson.ua.edu; Matthew McKay, Missouri State University, matthewmckay@missouristate.edu; Ryan Thigpen, University of Kentucky, ryan.thigpen@uky.edu.

FT9. **The Carboniferous Foreland of the Southern Appalachians: A Virtual Field Trip in Alabama.** Sat., 3 Apr. Willis Hames, Auburn University, hameswe@auburn.edu; Ashraf Uddin, Auburn University, uddinas@auburn.edu; Jack C. Pashin, Oklahoma State University, jack.pashin@okstate.edu.

FT10. **Fall Line to the Flint: Geology and Hydrology of the Dougherty Plain and Nearby Destinations.** Sun., 4 Apr. James B. Deemy, College of Coastal Georgia, jdeemy@ccga.edu; Todd C. Rasmussen, University of Georgia, trasmuss@uga.edu; Steven Brantley, The Jones Center at Ichauway, sbrantley@jonesctr.org; Joe Honings, The Jones Center at Ichauway and Louisiana State University, jhonings@jonesctr.org; Coleman Barrie, The Jones Center at Ichauway and Auburn University, cbarrie@jonesctr.org.

FT11. **Alabama Botany for Rock Jocks.** Sun., 4 Apr. Patrick Thompson, Davis Arboretum of Auburn University, thomppg@auburn.edu; Marilyn B. Vogel, Auburn University, mbv0008@auburn.edu; Noah Yawn, Auburn University, ndy0002@auburn.edu.

SHORT COURSES

Short Course registration opens in January. There is no fee for these courses; the price is included in the registration cost.

SC1. **Gemology Basics.** Wed., 31 Mar. Lisa Forrester Clark, World Gem Foundation and the Gemological Society of America, lisaforrester@live.com; Mary Forrester Dalton.

SC2. **Fractionating the Earth: What Isotopes Can Tell Us about The Past, Present, and Future.** Wed., 31 Mar. Ann S. Ojeda, Auburn University, aso0013@auburn.edu; Laura Bilenker, Auburn University, ldb0036@auburn.edu; Willis Hames, Auburn University, hameswe@auburn.edu; Matthew DeCesare, Auburn University, mrd0048@auburn.edu; Brennan van Alderwerelt, Auburn University, bmv0011@auburn.edu; Haibo Zou, Auburn University, hzz0006@auburn.edu.

OPPORTUNITIES FOR STUDENTS AND EARLY CAREER PROFESSIONALS

Career Mentoring Programs

GSA student members can ask career-related questions and learn about non-academic pathways in the geosciences while networking with professionals at the Roy J. Shlemon and John Mann Mentor Programs.

Career Workshop

This workshop will feature career development planning, an exploration of geoscience job sectors, and information on best practices for crafting a résumé and cover letter. Non-technical skills and workforce statistics will be reviewed. The series will be led by workshop presenters and geoscientists. No registration is required, and everyone is welcome.

Learn more at **https://www.geosociety.org/mentors.** Questions? Contact Jennifer Nocerino at jnocerino@geosociety.org.

PROFESSIONALS

Interested in sharing information about your applied geoscience or hydrology career with students? Being a mentor is a rewarding experience. To learn more about serving as a mentor at SEGSA, contact Jennifer Nocerino at jnocerino@geosociety.org.

SEGSA also 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.

LOCAL COMMITTEE

Organizing Chair: Willis E. (Bill) Hames, hameswe@auburn.edu
Technical Program Co-Chairs: Karen McNeal, ksm0041@auburn.edu; Kathryn Brown, ksn0006@auburn.edu
Field Trip Chair: David T. King Jr., kingdat@auburn.edu
Sponsorships Chair: Charles E. (Chuck) Savrda, savrdce@auburn.edu
Exhibits Co-Chairs: Laura Bilenker, ldb0036@auburn.edu; Ann Ojeda, aso0013@auburn.edu
Treasurer: Haibo Zou, hzz0006@auburn.edu
Student Volunteer Chair: Ashraf Uddin, uddinas@auburn.edu
Education Programs Co-Chairs: Marilyn Vogel, mbv0008@auburn.edu; Stephanie Rogers, s.rogers@auburn.edu
Guest Activities Program Co-Chairs: Brennan Vanalderwerelt, bmv0011@auburn.edu; Ann Ojeda, aso0013@auburn.edu

FINAL ANNOUNCEMENT

Northeastern Section

56th Annual Meeting of the Northeastern Section, GSA
14–16 March 2021

www.geosociety.org/ne-mtg

The skyline of Hartford, Connecticut, as seen from across the Connecticut River. Image by Jimaro Morales from Pixabay.

THE ONLINE MEETING

The meeting, originally scheduled to be held in Hartford, Connecticut, USA, will now be fully online. The theme of this year's meeting is ***Lithosphere, Hydrosphere, Anthroposphere,*** which reflects interrelated components of planet Earth. In particular, over the past several decades we have become more aware of the impact of humans on the planet. We intend for this meeting to be a venue to communicate not only our recent advances in understanding our planet but also the role of humans in transforming it.

REGISTRATION

Early registration deadline: 8 Feb.
Cancellation deadline: 16 Feb.

For further information, please contact the general chair: Mark Evans, evansmaa@ccsu.edu.

REGISTRATION FEES (all fees are in U.S. dollars)

	Early	Standard
Professional Member	$100	$115
Professional Member 70+	$50	$60
Professional Nonmember	$115	$130
Early Career Professional Member	$60	$70
Student Member	$25	$25
Student Nonmember	$40	$50
K–12 Professional	$30	$40

ONLINE FIELD TRIPS

There is no fee for these field trips; the price is included in registration cost. For additional information, please contact the Field Trip chair: Jean Crespi, jean.crespi@uconn.edu.

Burying the Park: Hartford and its Rivers. Date: TBD. *Cosponsored by Eastern Section–SEPM (Society for Sedimentary Geology); GSA Quaternary Geology and Geomorphology Division.* Gary A. Gomby, Central Connecticut State University, garygomby@ccsu.edu.

Anthropocene Landscape Change and the Legacy of Human Impacts in Southern New England. *Cosponsored by Eastern Section–SEPM (Society for Sedimentary Geology); GSA Quaternary Geology and Geomorphology Division.* Date: TBD. William Ouimet, University of Connecticut, william.ouimet@uconn.edu; Robert Thorson, University of Connecticut, robert.thorson@uconn.edu.

Revisiting the Geology of Central Park, Manhattan, New York City, USA. Date: TBD. Steven J. Jaret, American Museum of Natural History, sjaret@amnh.org; Nicholas D. Tailby, American Museum of Natural History, ntailby@amnh.org; Keiji Hammond, American Museum of Natural History, khammond@amnh.org.

Accessible Geology in the Hartford Basin. *Cosponsored by International Association for Geoscience Diversity (IAGD); Eastern Section–SEPM (Society for Sedimentary Geology).* Date: TBD. Jennifer Piatek, Central Connecticut State University, piatekjel@ccsu.edu; Anita Marshall, University of Florida, anita.marshall@ufl.edu; Sean Thatcher, Rutgers University, sean.thatcher1990@gmail.com.

Exploring Western New England's Geologic History: A Half-Day Field Trip for Teachers and the Community. *Cosponsored by National Association of Geoscience Teachers, New England Section.* Date: TBD. Tarin Weiss, Westfield State University, tweiss@westfield.ma.edu; Susan Meabh-Kelly, Henry Abbot Technical School, Danbury, Connecticut, susankelly.ct@gmail.com; Lindsay Waack, Wilton High School, Wilton, Connecticut, LWAACK@fairfieldschools.org; Lori Weeden, University of Massachusetts, Lowell, Lori_Weeden@uml.edu.

SHORT COURSES

There is no fee for these short courses; the price is included with registration, with the exception of "Improving Environmental Site Characterization and Monitoring through Integration of Modern Methods and Legacy Datasets." For additional information, please contact the Short Course chair: Margaret Thomas, Margaret.Thomas@ct.gov.

Teaching the Anthropocene. *Cosponsored by Eastern Section–SEPM (Society for Sedimentary Geology).* Date: TBD. Robert M. Thorson, University of Connecticut, robert.thorson@uconn.edu.

High Tech, Low Tech, No Tech? Developing Inclusive Field Experiences. Date: TBD. Jennifer Piatek, Central Connecticut State University, piatekjel@ccsu.edu; Anita Marshall, University of Florida, anita.marshall@ufl.edu; Sean Thatcher, Rutgers University, sean.thatcher1990@gmail.com.

The LiDAR Revolution in Earth Surface Mapping—From Data Download to Applications in Historic Land-Use Reconstruction and Surficial Geologic Mapping. *Cosponsored by Eastern Section–SEPM (Society for Sedimentary Geology).* Date: TBD. William Ouimet, University of Connecticut, william.ouimet@uconn.edu; Janet Radway Stone, U.S. Geological Survey (emeritus), jrstone@usgs.gov; Margaret A. Thomas, Connecticut Geological Survey, margaret.thomas@ct.gov.

The Digital Geologic Map Schema (GeMS). Date: TBD. Robert G. Marvinney, Maine Geological Survey, robert.g.marvinney@maine.gov; David R. Soller, USGS, drsoller@usgs.gov; Ralph Haugerud, USGS, rhaugerud@usgs.gov.

NEW! Improving Environmental Site Characterization and Monitoring through Integration of Modern Methods and Legacy Datasets. Date: TBD. Mark Higgins, University of Connecticut, mark.higgins@uconn.edu; Robert J. Stuetzle, The Dow Chemical Company, RJStuetzle@dow.com. For those seeking CT LEP credits, the fee is US$100. For all others, the fees are US$30 for professionals and US$20 for students.

OPPORTUNITIES FOR STUDENTS

Career Mentoring Virtual Programs

GSA student members can ask career-related questions and learn about non-academic pathways in the geosciences while networking with professionals at the Roy J. Shlemon and John Mann Mentor Programs.

Career Workshop

This workshop will feature career development planning, an exploration of geoscience job sectors, and information on best practices for crafting a résumé and cover letter. Non-technical skills and workforce statistics will be reviewed. The series will be led by workshop presenters and geoscientists. No registration is required, and everyone is welcome.

To learn more about mentors and career workshops, go to **https://www.geosociety.org/mentors** or contact Jennifer Nocerino at jnocerino@geosociety.org.

PROFESSIONALS

If you like to share your interest, enthusiasm, and experience in applied geology, consider being a GSA mentor during the meeting. Being a mentor is a rewarding experience. To learn more, contact Jennifer Nocerino at jnocerino@geosociety.org.

This meeting also offers an excellent opportunity to earn CEUs toward your continuing education requirements for your employer, K–12 school, or professional registration. The CEU certificate can be downloaded from the meeting website after the meeting.

LOCAL COMMITTEE

Organizing Chair: Mark Evans, evansmaa@ccsu.edu
Technical Program Co-Chairs: Michael Wizevich, wizevichmic@ccsu.edu; Christoph Geiss, Christoph.geiss@trincoll.edu
Field Trip Chair: Jean Crespi, jean.crespi@uconn.edu
Sponsorships Co-Chairs: Allison Weinsteiger, weinsteiger@ccsu.edu; Oluyinka Oyewumi, oyewumi@ccsu.edu
Short Course Chair: Margaret Thomas, Margaret.Thomas@ct.gov
Exhibits Co-Chairs: Drew Hyatt, hyettj@easternct.edu; Phil Resor, presor@wesleyan.edu
Industry Relations Chair: Jon Gourley, jonathan.gourley@trincoll.edu
Student Volunteer Chair: Jennifer Piatek, piatekjel@ccsu.edu
K–12 Teacher Education Program Co-Chairs: Jeff Thomas, thomasjed@ccsu.edu; Kristine Larsen, larsen@ccsu.edu

GeoCareers Programs at the 2021 Section Meetings

MENTOR PROGRAMS

GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors.

Northeastern: Online Meeting
Shlemon Mentor Program: Sunday, 14 Mar.
Mann Mentors in Applied Hydrology Program: Monday, 15 Mar.

Southeastern Section: Online Meeting
Shlemon Mentor Program: Thursday, 1 Apr.
Mann Mentors in Applied Hydrology Program: Friday, 2 Apr.

Joint North-Central South-Central Section: Online Meeting
Shlemon Mentor Program: Sunday, 18 Apr.
Mann Mentors in Applied Hydrology Program: Monday, 19 Apr.

Cordilleran Section: Online Meeting
Shlemon Mentor Program: Wednesday, 12 May
Mann Mentors in Applied Hydrology Program: Thursday, 13 May

CAREER WORKSHOP

This workshop will be offered at each of the 2021 Section Meetings and will feature career planning, an exploration of geoscience job sectors, tips on how to get your résumé noticed, and what employers are looking for in new hires. You'll also learn about best practices for crafting a résumé and cover letter. Non-technical skills and Individual Development Plans (IDPs) will be reviewed. No registration is required, and everyone is welcome.

The Geological Society of America®
GEOCAREERS

Mentor the Next Generation of Scientists

Join Mentoring365, a virtual three-month mentoring program to connect with students and early career scientists, share career experiences, and give back to the geoscience community. Mentoring365 is a partnership among earth and space science organizations and was developed to facilitate dialogue and collaborative learning between mentoring pairs.

https://mentoring365.chronus.com/p/p1/

GSA 2020 Connects Online: Register for On-Demand Viewing or Reconnect Now

Advance your career, broaden your geologic knowledge, and be part of the conversation by registering for GSA 2020 Connects Online on demand at **https://community.geosociety.org/gsa2020/registration.** Take advantage of the cutting-edge science presented at the meeting through 31 Oct. 2021.

"I think we can find some silver linings to this year's virtual conferences worldwide. Science can have a much wider reach. I LOVE that I will have a year to listen to all the talks I am interested in." — 2020 attendee

Reconnect: Did you miss a session during the live meeting due to conflicting schedules? You can experience more of GSA 2020 Connects Online and keep taking advantage of the cutting-edge science presented at the meeting. Sign in to the e-Attend platform at **https://gsa2020.e-attend.com/** to view sessions on demand through 31 Oct. 2021.

CALL FOR GSA COMMITTEE SERVICE

Help Shape the Future of Geoscience

Deadline: 15 June
Terms begin 1 July 2022 (unless otherwise indicated)

If you are looking for the opportunity to work toward a common goal, diversify GSA leadership, network, and make a difference, then we invite you to volunteer (or nominate a fellow GSA member) to serve on a Society committee or as a GSA representative to another organization. GSA especially welcomes volunteers or nominations of people from underrepresented groups.

Learn more and access the nomination form at **https://rock.geosociety.org/Nominations/CS.aspx.** Use the online form to make a nomination or volunteer. Open positions and qualifications are also online at **https://rock.geosociety.org/forms/viewopenpositions.asp.** GSA headquarters contact: Dominique Olvera, P.O. Box 9140, Boulder, CO 80301-9140, USA; fax: +1-303-357-1060; dolvera@geosociety.org.

Committee, Section, and Division Volunteers: Council Thanks You!

GSA Council acknowledges the many member volunteers who have contributed to the Society and to our science through involvement in the affairs of the GSA. Your time, talent, and expertise help build a solid and lasting Society.

B—Meets in Boulder or elsewhere; **E**—Communicates by phone or electronically; **M**—Meets at the Annual Meeting; **T**—Extensive time commitment required during application review period.

Academic and Applied Geoscience Relations Committee

Member-at-Large Student (3-year term; E, M)

This committee is charged with strengthening and expanding relations between GSA members in applied and academic geosciences. As such, it proactively coordinates the Society's effort to facilitate greater cooperation between academia, industry, and government geoscientists. **Qualifications:** Committee members must work in academia, industry, or government and be committed to developing a better integration of applied and academic science in GSA meetings, publications, short courses, field trips, and education and outreach programs. Professional interest: Environmental and Engineering Geology, Hydrogeology, Karst, Quaternary Geology and Geomorphology, Structural Geology and Tectonics, Sedimentary Geology. Members must also be active in one or more GSA Divisions.

Annual Program Committee

Two Members-at-Large (4-year term; B, E, M)

This committee is charged with developing a plan for increasing the quality of the annual and other society-sponsored meetings in terms of science, education, and outreach; evaluating the technical and scientific programs annually to identify modifications necessary for accomplishing the Society's long-range goals; conducting short and long-range planning for the Society meetings as a whole and developing a long-term logistical plan/strategy for the technical programs of all GSA meetings and other Society-sponsored meetings. One member-at-large should have previous meeting experience.

Arthur L. Day Medal Award

Two Members-at-Large (3-year term; E, T)

This committee selects candidates for the Arthur L. Day Medal. **Qualifications:** Members should have knowledge of those who have made "distinct contributions to geologic knowledge through the application of physics and chemistry to the solution of geologic problems." All of the committee's work will be accomplished during the months of February and March. All committee decisions must be made by 1 April.

Bascom Mapping Award Committee

Member-at-Large (Student) (3-year term; E, T)

This committee selects candidates for the Florence Bascom Geologic Mapping Award. This award acknowledges contributions in published high-quality geologic mapping that led the recipient to publish significant new scientific or economic-resource discoveries, and to contribute greater understanding of fundamental geologic processes and concepts. **Qualifications:** Members should be knowledgeable in the field of mapping.

Diversity in the Geosciences Committee

Three Members-at-Large (3-year term; E, M)

This committee provides advice and support to GSA Council, raises awareness, and initiates activities and programs that will increase opportunities for diverse groups in the geosciences particularly in the dimensions of race, ethnicity, gender, and physical abilities. The committee is also charged with stimulating recruitment and promoting positive career development. **Qualifications:** Members of this committee must have professional or experiential knowledge of issues relevant to the goals of the committee. GSA strongly encourages nominations of members who are from the communities which this committee is expected to serve.

Education Committee

Graduate Educator Representative (4-year term; E, M); Informal Science Educator Representative (4-year term; E, M); Undergraduate Student Representative (2-year term; B, E, M)

This committee works with GSA members representing a wide range of education sectors to develop informal, pre-college (K–12), undergraduate, and graduate earth-science education and outreach objectives and initiatives. **Qualifications:** Members of this committee must have the ability to work with other interested scientific organizations and science teachers' groups.

Geology and Public Policy Committee

Two Members-at-Large (3-year term; E, M)

This committee provides advice on public-policy matters to Council and GSA leadership by monitoring and assessing international, national, and regional science policy; formulating and recommending position statements; and sponsoring topical white papers. This committee also encourages the active engagement in geoscience policy by GSA members. **Qualifications:** Members should have experience with public-policy issues involving the

science of geology; the ability to develop, disseminate, and translate information from the geologic sciences into useful forms for the general public and for GSA members; and familiarity with appropriate techniques for the dissemination of information.

GSA International

Member-at-Large (4-year term; E, M); Member-at-Large, North America (4-year term; E, M); Member-at-Large, outside North America (4-year term; E, M); Member-at-Large Student (2-year term; E, M); International Associated Society Member (4-year term; E, M)

Serve as GSA's coordination and communication resource seeking to promote, create, and enhance opportunities for international cooperation related to the scientific, educational, and outreach missions shared by GSA and like-minded professional societies, educational institutions, and government agencies. Build collaborative relationships with Divisions and Associated Societies on international issues and serve as a channel for member-generated proposals for international themes.

Membership and Fellowship Committee

Two Members-at-Large-Academia (3-year term; B); Member-at-Large Government (3-year term; B)

This committee contributes to the growth of the GSA membership, enhances the member experience, and serves a vital role in the selection of Fellows, with the goal of fostering a membership community as pertinent and global as our science. Committee members should understand what various segments of members want from GSA and should be familiar with outstanding achievers in the geosciences worthy of fellowship. **Qualifications:** Committee members should have experience in benefit, recruitment, and retention programs.

North American Commission on Stratigraphic Nomenclature

GSA Representative (3-year term; E, M)

The commission develops statements of stratigraphic principles, recommends procedures applicable to classification and nomenclature of stratigraphic and related units, reviews problems in classifying and naming stratigraphic and related unites, and formulates expressions of judgment on these matters. **Qualifications:** Members must be familiar with the fields of paleontology, biostratigraphy, and stratigraphy.

Nominations Committee

Member-at-Large (3-year term; B, E); Member-at-Large-Government (3-year term; B, E)

This committee recommends nominees to GSA Council for the positions of GSA Officers and Councilors, committee members, and Society representatives to other permanent groups. **Qualifications:** Members must be familiar with a broad range of well-known and highly respected geoscientists.

Penrose Conferences and Thompson Field Forums Committee

Four Members-at-Large (3-year term; E)

This committee reviews and approves Penrose Conference and Thompson Field Forum proposals and recommends and implements guidelines for the success of these meetings. **Qualifications:** Committee members must be early career scientists/professionals.

Penrose Medal Award Committee

Two Members-at-Large (3-year term; E, T)

Members of this committee select candidates for the Penrose Medal. Emphasis is placed on "eminent research in pure geology, which marks a major advance in the science of geology." **Qualifications:** Members should be familiar with outstanding achievers in the geosciences worthy of consideration for the honor. All of the committee's work will be accomplished during the months of February and March. All committee decisions must be made by 1 April.

Professional Development Committee

Former Councilor (3-year term; E); Member-at-Large Student (3-year term; E)

This committee directs, advises, and monitors GSA's professional development program; reviews and approves proposals; recommends and implements guideline changes; and monitors the scientific quality of courses offered. Qualifications: Members must be familiar with professional development programs or have adult education teaching experience.

Publications Committee

Member-at-Large (4-year term; B, E, M); Member-at-Large Early Career Professional (4-year term; B, E, M)

The primary responsibilities of the committee are nomination of candidates for editors when positions become vacant; reviewing the quality and health of each Society publication; and reporting with an annual report to Council that includes recommendations for changes in page charges, subsidies, or any other publishing matter on which Council must make a decision. To carry out this charge, GSA headquarters will provide the committee with all necessary financial information.

Research Grants Committee

Eleven Members-at-Large with various specialties (3-year term; B, T)

The primary function of this committee is to evaluate approximately 800 graduate-student research grant applications and award specific grants to chosen recipients, including some named grants supported by funds within the GSA Foundation. **Qualifications:** Members may come from any sector (academia, government, industry, etc.) and should have experience in directing research projects and in evaluating research grant applications. GSA strongly encourages nominations of geoscientists from diverse backgrounds and institutions, particularly from minority serving institutions. **Extensive time commitment required 15 Feb.–15 April**; each member reviews approximately 40 applications. More information: **https://www.geosociety.org/gradgrants.**

Young Scientist Award (Donath Medal) Committee

Two Members-at-Large (3-year term; E, T)

Committee members investigate the achievements of young scientists who should be considered for this award and make recommendations to GSA Council. Qualifications: Members should have knowledge of young scientists with "outstanding achievement(s) in contributing to geologic knowledge through original research that marks a major advance in the earth sciences." All of the committee's work will be accomplished during the months of February and March. All committee decisions must be made by 1 April.

2020 GSA J. David Lowell Field Camp Scholarship Awardee Report

Maria T. Solis

I've been waiting for many years to attend field camp and I finally got the chance of a lifetime! Thanks to the J. David Lowell Scholarship I received from the Geological Society of America, I was able to take two months of field camp at the University of Texas at San Antonio, pay the necessary tuition, and go to the assigned places with the right equipment, to include dressing the part of a true geologist! Although COVID-19 was rampant and still is as I type this, we took all the necessary precautions. Instead of going to Montana as planned, we got to explore the geology of Texas. I never knew how incredible the geology of Texas was until I saw it with my own eyes. We had to wear our masks and social distance while hiking and mapping, and we went to the field minimally as necessary to reduce our chances of contracting the disease, but the learning was still intense, and the project maps, cross sections, presentations, and research papers were very challenging. I just finished my last project today and will put in the final touches in the next day or so. There were two parts to field camp this summer, the first of which was in June, and the second in July.

For June, we studied and did presentations on the creation and ultimate demise of the Manikewan Ocean in the Canadian Shield using virtual research methods. The second project involved creating a cross section of the geology between Del Rio, Texas, and Alpine, Texas, utilizing all the virtual tools available to us. I traveled Highway 90 taking pictures, measurements, and making lots of stops, which was lengthy but worth it. I was shocked at the amount of information I learned in June, especially after I finished the cross section (I didn't know the elevation rose so dramatically or that there were lots of folds under our feet!), but there was more to follow. All while I was still working at my job in support of stopping COVID-19.

Solis mapping an outcrop in Uvalde County in July 2020.

Solis studying and mapping conglomerates in Wilson County.

In July, we had three projects, all in Texas, around the eastern portion. The first was a study of the igneous intrusions of Uvalde County, where we each had to travel in our own vehicles to social distance. The next project involved the study of the ancient deltas of the Wilson County geology during the Eocene. The final project was a study of metamorphic rocks in the Burnet, Texas, area. Being in the Texas heat in July was difficult but bearable.

Although this was different than anything I've ever been through, it taught me a lot about Texas and the structures within the geology. The reason I chose the profession of geology was because I love it so much and always wanted to know more (what are the secrets of the rocks and the beautiful landscapes I see?). It was all possible thanks to the people who helped me to advance, and to those who, without knowing me, gave me this opportunity, for which I am thankful always!

Note: If you are able to help students like Maria attend field camp and pursue their geoscience training, you can make a gift now at **https://gsa-foundation.org/fund/field-camp-opportunities** or contact Debbie Marcinkowski at +1-303-357-1047, dmarcinkowski@geosociety.org, for more information.

To apply for a J. David Lowell Field Camp Scholarship, go to **https://www.geosociety.org/fieldcampawards.**

BOOKMARK THE GEOSCIENCE JOB BOARD

(https://www.geosociety.org/jobs) for up-to-the-minute job postings. Job Board ads may also appear in a corresponding monthly print issue of *GSA Today*. Send inquires to advertising@geosociety.org, or call +1-800-427-1988 ext. 1053 or +1-303-357-1053.

POSITIONS OPEN

Post-Doctoral Research Associate, Northwestern University

A two-year post-doctoral research associate position is available in the Department of Earth and Planetary Sciences at Northwestern University to investigate deep-time ocean acidification (OA) events using multiple stable and radiogenic isotope systems, including B, C, Ca, S, and Sr. The position is funded by the Ubben Program for Climate and Carbon Science administered by the Institute of Sustainability and Energy at Northwestern (ISEN). Applications are encouraged from candidates with experience in general and clean room chemistry, gas source and thermal ionization mass spectrometry, biomineralization, carbonate geochemistry, sedimentology, and numerical modeling. In addition, the successful candidate should have strong communication skills as they will work with colleagues in the Medill School of Journalism to publish a popular science article in a leading outlet highlighting paleo-OA research findings in relation to current and potential future OA.

Review of applications will begin on April 1, 2021. The start-date can be flexible, but no later than September 2021 (assuming easing of pandemic restrictions). Candidates must have a Ph.D. by the start date. Salary is commensurate with qualifications and experience. Applicants should submit a cover letter, statement of research interests and experience, CV, and list of three references, including e-mail addresses and phone numbers, with the subject line "OA Postdoc" to earth@northwestern.edu; electronic submission of a single pdf file is preferred; or Department of Earth and Planetary Sciences, Northwestern University, 2145 Sheridan Rd., Evanston, IL 60208. Questions about the position can be addressed to Andrew Jacobson (adj@earth.northwestern.edu), Matt Hurtgen (matt@earth.northwestern.edu), or Brad Sageman (brad@earth.northwestern.edu).

"We post on a number of sites. But, most, if not all, of our applicants come from GSA's job board."

Tenure-Track Position, Earth System Science, San José State University

The Department of Geology at San José State University invites applications for a tenure-track position in Earth System Science, with an emphasis on climatic change that integrates oceanography, coastal processes and human-environment interactions. Areas of expertise may include shoreline evolution and dynamics, paleoceanography, wetland or estuarine science, risk assessment associated with climate change, and impacts of human-induced modifications of the environment. A Ph.D. degree in the Earth Sciences is required. Experience in enhancing and promoting diversity and inclusion through novel teaching and research approaches is expected. A record of excellence in teaching or evidence of promise for excellence in teaching is expected. The successful candidate must have the interest and ability to teach Earth System Science, Geology and the Environment, and GIS, and will take a leadership role in teaching and curricular development of undergraduate and graduate courses in their area of expertise. Teaching non-majors is also expected. Research involving masters and undergraduate students is required, and external funding must be sought. Apply by Feb. 24, 2021, for full consideration. For more information please view the official job announcement at the SJSU website: https://jobs.sjsu.edu/en-us/job/498556/assistant-professor-geology. SJSU is an Affirmative Action/ Equal Opportunity Employer committed to the core values of inclusion, civility, and respect for each individual. A background check (including criminal records check) must be completed satisfactorily before any candidate can be offered a position with the CSU.

OPPORTUNITIES FOR STUDENTS

2021 Research Experience for Undergraduates, Concord University (WV) and Montana State University. Greenland. Arctic REU Greenland is a new NSF REU site for summer 2021. Research integrates geologic mapping, structural geology, and earthquake geodynamics in Precambrian metamorphic rocks. The REU includes full travel expenses and stipends. Applications from first-generation students and members of under-represented groups are encouraged. Apply online by Feb 7, 2021, and visit https://www.arcticreu.earth for more information. Contact: Joe Allen at allenj@concord.edu or Colin Shaw at colin.shaw1@montana.edu.

Disturbance Ecology in Central Appalachia, NSF Research Experiences for Undergraduates (REU) program at Eastern Kentucky University. Eastern Kentucky University is seeking applicants for a summer REU program. The theme of the research is disturbance ecology. Students will work at Lilley Cornett Woods, a field station with old-growth forest in eastern Kentucky, and in Daniel Boone National Forest. This is a 10-week program running from May 24–July 30, 2021.

Research projects for summer 2021 include studies of fish, salamanders, aquatic invertebrates, copperheads, migratory birds, small mammals, pollinators, old-growth forest, geohydrology, ecological resilience, remote sensing, and GIS. Students will develop research skills including communication, data collection and management, analysis, and writing, while also learning to work in remote field locations. Students will also participate in professional development workshops and recreational trips.

Student benefits include a stipend of $6000, housing, a food allowance, travel costs to and from EKU, research travel during the summer, and research supplies.

More information including the application can be found at https://bioreu.eku.edu/

Questions can be sent to David Brown or Kelly Watson at bioreu@eku.edu.

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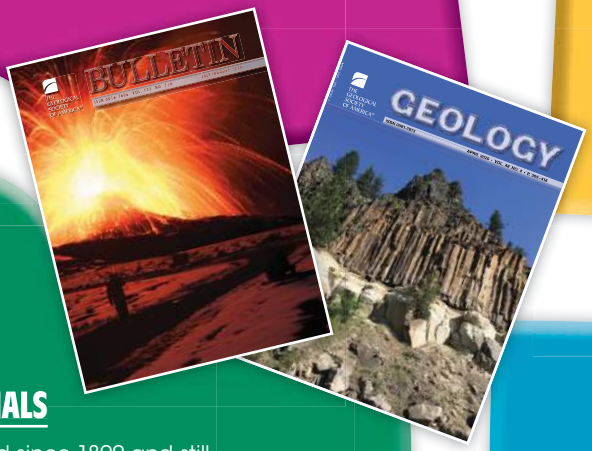

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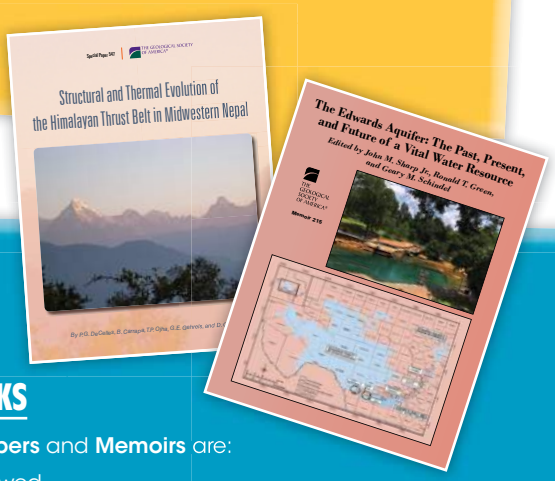

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Geology	4.768	5.412	geology.msubmit.net
GSA Bulletin	3.558	4.368	gsabulletin.msubmit.net
Geosphere	2.577	3.032	geosphere.msubmit.net
E&EG	0.755	0.785	www.editorialmanager.com/eeg

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THE GEOLOGICAL SOCIETY OF AMERICA®

Seeking Diversity in the Geosciences When Black Lives Matter

Sherilyn Williams-Stroud, *Illinois State Geological Survey/University of Illinois Urbana-Champaign, Champaign, Illinois 61820, USA*

INTRODUCTION

The death of George Floyd on 25 May 2020 ignited already high tensions in the U.S. Black community after months of sheltering in place to prevent the spread of COVID-19. Much higher rates of lost lives and jobs occurred in communities of color than in White communities. The confluence of events highlighted systemic inequities for People of Color (POC), making them visible to others. In the mostly peaceful protests that took place all over the world, an interesting and positive observation could be made—there were many White participants, signaling a change in the understanding of the phrase "Black Lives Matter." The wave of protests sparked a wave of a variety of organizations and businesses issuing statements of support. GSA was one of the first organizations to do this, while acknowledging that the geosciences have not done a good job of advancing diversity. The current mindset provides an opportunity for us to interrogate the discipline's failure to achieve equity while it is experiencing a mood of receptive inquiry. This article examines some of the historical data on diversity in the geosciences and cites studies that provide possible reasons why representation has not increased. A recognition of previous and existing programs currently generating more POC geoscientists is key: Building upon them can provide a path to successfully improving diversity in the geoscience community.

NEARLY FOUR DECADES OF DIVERSITY GAINS?

The concept of "implicit bias" caught fire in recent years as an explanation for how people's choices and expectations impact evaluation, hiring, and promotion decisions. More recently, machine learning applications were expected to eliminate bias because models trained with just data would be free of human bias. One study concluded that judges' bail determinations for the riskiest criminal suspects were incorrect nearly 50% of the time (Kleinberg et al., 2018). The promise of the machine to eliminate bias was very quickly dampened by the realization of just how difficult it is to keep human biases out of the machine learning process (Zou and Schiebinger, 2018). While we were examining our biases, representation gave way to diversity, thereby softening the focus on parity. The result was that measuring all students and faculty by the same metric prevented the desired increase of those underrepresented in academia (Tapia, 2010).

The numbers of women geoscientists have increased since prior to the start of my professional career at the U.S. Geological Survey in 1988, but I am still usually the only person in my combined category (Black woman geoscientist) in the room. This reality is reflected in the fact that the number of geoscience Ph.D.s awarded to Black and Native American people has remained nearly constant in the 38 years of data shown in Figure 1, obtained from the National Center for Science and Engineering Statistics (NCSES), illustrating where progress has (or has not) been achieved regarding parity of POC in the academy. Parity relative to the U.S. population would mean an earth-science department faculty is 13% Black, but the portion of Black faculty remains significantly below that, less than 2%. The data analyzed for this article is personally relevant for me; it tracks my involvement in the field starting with my undergraduate study. Since 1980, the proportion of Ph.D.s awarded to Black recipients averaged 2.6%. Martinez-Acosta and Favero (2018) suggested that diversity efforts were unsuccessful because the culture of academia may not truly be inclusive. Organizational culture change resulting from diversity training appears to have been short-lived in most cases, and a study published in the *Harvard Business Review* found that voluntary diversity programs in the corporate environment are the most effective at achieving equity (Dobbin and Kalev, 2016). These findings are also applicable to academia, consistent with the assertion by Golom (2018) that institutional culture is a significant obstacle to change.

Another possible problem with diversity initiatives is that they are often implemented beneath an umbrella covering all underrepresented groups. The most effective solutions for each group can be different, though overlapping. Conflating diverse groups together may have had a detrimental effect on the success of POC in higher education (Shapiro et al., 2017). In the past few years, the number of white female Ph.D. recipients has reached near parity with White men but Black and other POC still fall significantly short of representation. Issues related to retention, support, advancement, and freedom from sexual harassment have become more important for women than recruitment, as shown in a study done at Columbia University (June, 2018).

DISCUSSION

Recruiting POC students to earth science is a critical part of the solution. A successful program of recruitment and access that is exposing students to geosciences at the middle to high-school level is the Mathematics, Science, and Engineering Academy (M-SEA) at Fort Valley State University, implemented in 1993 as part of their long standing (ca. 1983) Cooperative Developmental Energy Program (CDEP). A total of 419 STEM graduates have been produced from the programs, 47 of whom received geoscience degrees. An analysis of data on Historically Black Colleges and Universities (HBCUs) from the NCSES shows that more than 30% of STEM bachelor's degrees awarded to Black

GSA Today, v. 31, https://doi.org/10.1130/GSATG476GW.1.

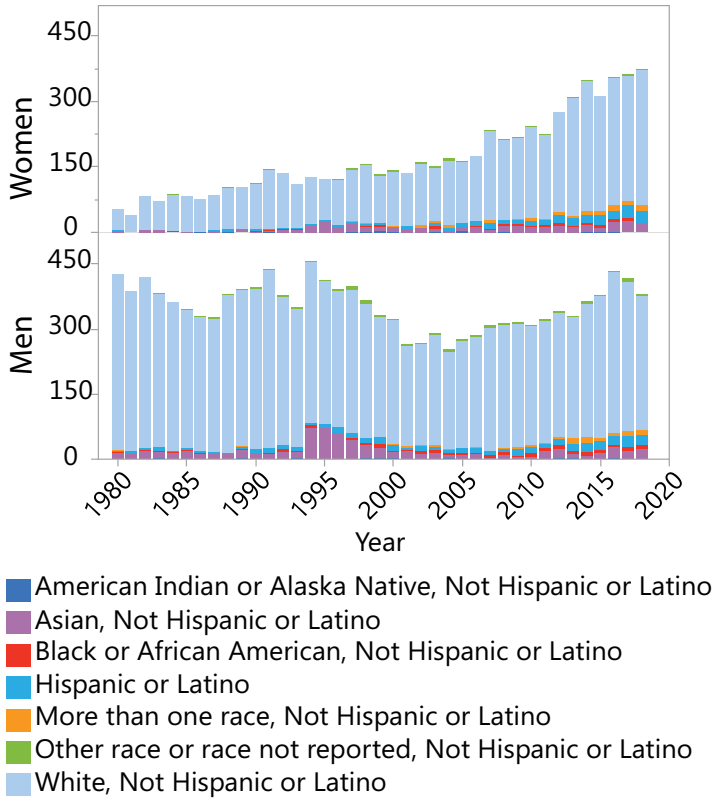

Figure 1. Doctorates awarded in geoscience, atmospheric, and ocean sciences from 1980 to 2018, showing distribution by ethnicity and race. Top histogram shows degrees awarded to women, bottom histogram shows degrees awarded to men. Source: National Center for Science and Engineering Statistics.

Americans were from HBCUs. The relative percentage by field of study varies; HBCUs produce 52% of Black physicists but only 10% of Black geoscientists. CDEP has made a very significant contribution to changing these numbers, as this program alone accounts for ~20% of all geoscience bachelor's degrees from HBCUs. Recognizing this pipeline has important implications because 30% of Black recipients of a geoscience doctoral degree earned their bachelor's at an HBCU. This kind of relationship is not only true for Black geoscientists, but for POC students in all minority-serving institutions. GeoFORCE at the University of Texas, modeled on the M-SEA program, also encourages students of color to pursue geoscience and is adding POC students to the pipeline.

CONCLUSIONS

For many years, a commitment to enhance diversity has been expressed by universities and in the private sector, but the numbers indicate a lack of efficacy for those efforts or an inability to turn good intentions into concrete actions. It seems clear that a one-size-fits-all approach to improve diversity does not do so equally across all underrepresented groups. With respect to increasing POC in the geosciences, additional programs modeled after CDEP can fill the pipeline. The biggest challenge for replicating and sustaining these programs is funding, which for CDEP and GeoFORCE comes largely from the private sector because businesses recognized an opportunity to cultivate needed talent. Making geoscience culture more welcoming to POC is only part of the solution, and the critical question is whether the now-enlightened academic geoscience community has the will to adopt and support (financially and otherwise) replications of programs that have proven to increase representation.

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Get to Know Your GSA Foundation Board

The GSA Foundation Board of Trustees is a group of volunteer leaders—prominent and dedicated geologists—who govern the Foundation. We are fortunate that their multi-year terms, often renewed for a second consecutive span, provide a stable continuum to ensure transparent, cost-effective operations, open communication with the Society, and prudent fund management. We would like to introduce you to our two newest Trustees, who joined the board in the last year.

Lydia Fox is associate professor of geological & environmental sciences at the University of the Pacific and also the director of undergraduate research. A recipient of Pacific's Distinguished Faculty Award and the Spanos Distinguished Teaching Award, Lydia is passionate about teaching and connecting undergraduates to research opportunities. Lydia received her B.S.E. in geological engineering from Princeton University and her Ph.D. in geological sciences from the University of California Santa Barbara and initially worked as a field engineer for Schlumberger Well Services and then as a geologist for the U.S. Geological Survey in Menlo Park before teaching at California State University, Northridge. While department chair at Pacific, Lydia facilitated the addition of a major in environmental sciences and has been the director of the Interdisciplinary Environmental Studies program since 2004. Her research is in the area of Mesozoic granites and hydrothermal alteration. She remains deeply involved in her field: Lydia is an active member of the Council on Undergraduate Research (CUR), and she is currently the chair of the Field Camp Scholarship Committee for the National Association of Geoscience Teachers and serves on the Executive Committee of the Education Section of the American Geophysical Union.

Farouk El-Baz returns to the Foundation board, on which he previously served from 1999–2009. He is seasoned in fundraising efforts on behalf of GSA, since he also served on the Second Century committee in the mid-nineties, including as campaign co-chair for two years. Many of you are aware of two awards he established with GSAF: The El-Baz Desert Research Award recognizes an outstanding body of work by a young scientist in warm desert research, and the El-Baz Research Grant supports desert studies by students either in the senior year of their undergraduate studies or at the master's or Ph.D. level. Years before his deep involvement with GSA, Farouk received a B.S. in chemistry and geology from Ain Shams University in Egypt. His M.S. and Ph.D. degrees are from University of Missouri and MIT. He went on to work in Egypt's oil industry before becoming secretary of lunar-landing site selection in the Apollo program. From the early 1970s and into the 1980s, he established and directed the Smithsonian Institution's Center for Earth and Planetary Studies and served as science advisor to the late President Anwar Sadat of Egypt. Farouk stepped into the corporate world for several years at Itek Optical Systems before moving on to a 30-year tenure at Boston University. His awards, honors, fellowships, and board memberships are numerous, reflecting an esteemed career across both the United States and Egypt and not the least of which include eight honorary doctoral degrees, chairmanship of the U.S. National Committee for Geological Sciences, and NASA's Apollo Achievement Award.

Both of our new Trustees bring invaluable experience and expansive insight to the Foundation. We hope you will have the opportunity to meet and talk with them through various GSAF activities over the coming years.

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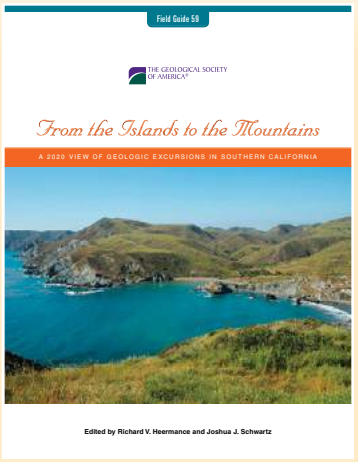

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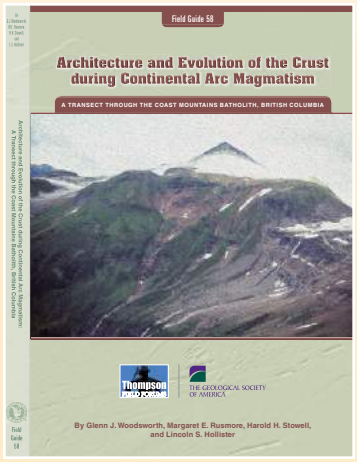

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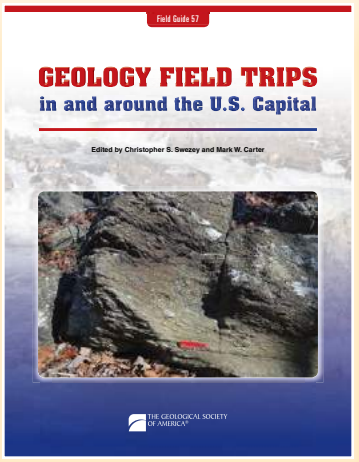

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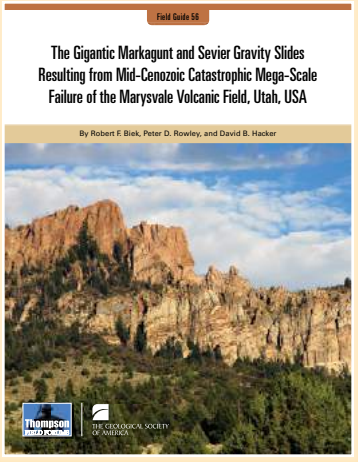

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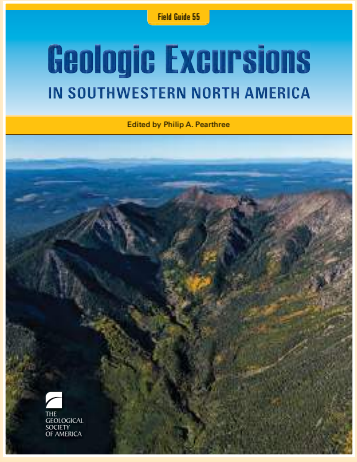

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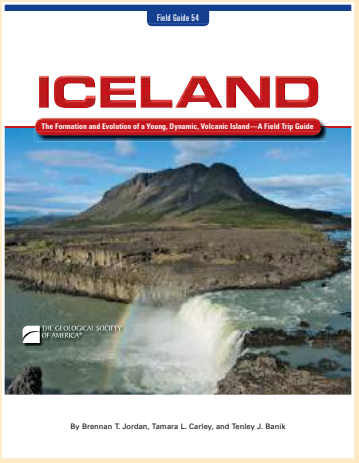

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