



Near-Surface Views

Newsletter of the NEAR-SURFACE GEOPHYSICS Technical
Section of the Society of Exploration Geophysicists

Second Quarter 2021, Vol. 29, No. 2

Letter from the Chair

Dear friends,

The global pandemic is still affecting many of you around the world despite several bright spots brought by the vaccination progression. After more than one year with COVID-19, academics and business activities in Geosciences are deeply disrupted by travel bans, social distancing rules, and turn-down of raw material demands ...

However, the near surface geophysics is more than ever needed to anticipate and, to accompany both the climate change and the energy transition. We have to show how near surface geophysics can underpin the UN Sustainable Development Goals (Capello, Shaughnessy and Caslin, TLE, January 2021). The near-term challenges the humanity faces impose a better imaging, understanding and monitoring of the first kilometer of the Earth-crust. There are still sciences and technologies to develop and, strategic approaches and best practices to transfer for achieving these objectives. Thanks to continuous technology improvements, geoscientists are able to scale up and accelerate all their current and future activities.



The origins, the backgrounds and the technologies of the near surface geophysics community is as diverse as the applications and businesses it targets. It makes outreach and animation more difficult than in integrated industry (from upstream to downstream). It is why the Near-Surface Geophysics Technical Section is the unwavering support for students and young professionals bringing together a diverse panel of scientists from both the public and the industry spheres. Our continued efforts are focused on bridging the gaps between technologies, strengthening the links between all generations and diverse horizons of scientists, generating enthusiasm and inspirations, and cross-fertilizing thanks to the diversity of the assembly and our willingness to interact with others groups focused on Geosciences in general and on near surface geophysics in particular. As the humanity mid-term stakes are driven by the climate change and the energy transition, near surface geophysics have to contribute to both by enlarging its partnerships, such as SEG-AGU, SEG-NGWA, SEG-ASCE G-I, and SEG-EEGS collaborations.

As an example, near surface geophysics can play an important role in the managed aquifer recharge together with hydrologists. It is one of the solutions to water shortage and endangered ecosystems that has rapidly increased in Australia, USA, Middle-East and Europe since the 1990'.

It is also an emerging solution for storage intermittent energy as wind or solar based. Desalinization of brackish or sea-water can be powered by the surplus of renewable energy produced by wind or solar farms resulting in an environmental energy storage system: a sort of “power-to-fresh water”.

The Annual meeting together with special technical sessions and post-convention workshop is an opportunity for sharing many other examples of applications, improvements of state-of-the-art techniques and new developments. We are all eager to meet in person in Denver, or virtually for those who will not be able to attend. Please check out the SEG annual meeting webpage for a list of technical sessions and other near-surface geophysics events <https://seg.org/AM/>.

The 2021 elections will open on 1 June and close on 1 July 2021. The candidates are diverse and well rounded, with emerging professionals and recognized experts from around the globe on the ballot. If you are a current member in good standing of the SEG Near-Surface Geophysics Technical Section, please expect your election survey to arrive in your email inbox on the first of June. We have several open appointed positions, if you are interested in participating with us, please send your interest statement to ns@seg.org.

Catherine Truffert
Near-Surface Geophysics Technical Section Chair

Overview of this Issue of the NS Views

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Annual Meeting

26 Sep - 1 Oct 2021

Denver, CO

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You can contribute to NS Views

What’s Hot: new methods, developments, technology, equipment, or NS events.

Member News & Updates: personal and professional highlights (i.e., retirements, special publications, and awards.)

On the Horizon: student spotlight

Email ns@seg.org with content & contact information.

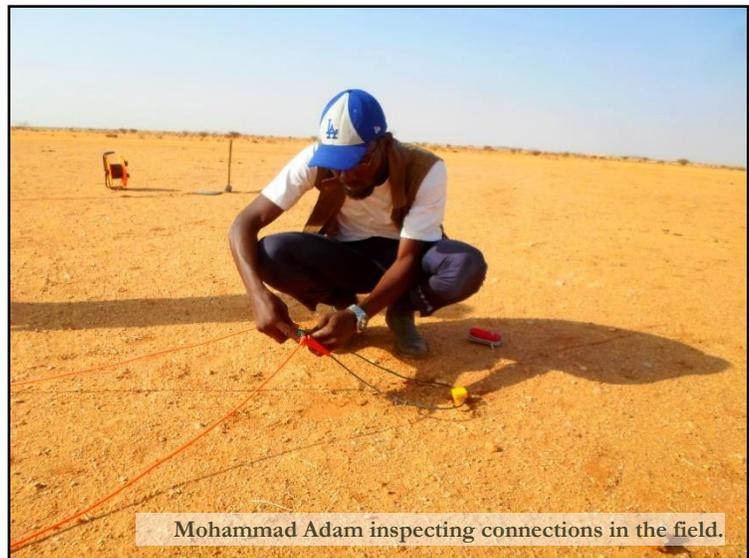


<https://donate.seg.org/Near-Surface>

On the Horizon

On the Horizon is a space to shine the spotlight on near-surface geophysics students. These are our future colleagues and leaders. Read about what they are doing right now.

My name is Mohammad Adam. I am from Sudan and a postgraduate student at the China University of Geosciences (Wuhan), School of Geophysics and Geomatics. I am studying engineering geophysics and my research path is uses Rayleigh waves to defined boundaries of cavities. I have studied geophysics as a general specialty but became interested in engineering geophysics (near-surface geophysics) during my first field project: Foundation Assessment Using Integrated Engineering Geophysical Techniques for Gas Pipeline. This study explored the nature of the rocks covering the area, by detecting soil thickness and superficial deposits above igneous and metamorphic rocks using three integrated geophysical methods: seismic refraction, resistivity, and geothermal methods. I have loved near-surface geophysics since working on this project and participating in Maximizing Asset Value through Artificial Intelligence and Machine Learning Workshop 2018 in Beijing. I want to take this opportunity to thank Professor Alfred Liaw, Executive Director of the (SEG) China Office, for his assistance and encouragement. I am very thankful to SEG, and the Near-Surface Geophysics family. Thank you, SEG. Connect with Mohammad on [LinkedIn](#).





NSTS Leadership

Catherine Truffert
Chair

Erika Gasperikova
Chair-Elect

Chester Weiss
Past Chair

John Goff
Vice Chair

Sarah Morton Rupert
Vice Chair of Committees

Christine Downs
Secretary

Kennedy Doro
Global Chair

Chih-Ping Lin
Global Vice Chair

Neils Grobbe
Finances and Grants Lead

Morgan Sander-Olhoeft
Student Programs Lead

Esther Babcock (Jun 2021)
Continuing Education Lead

Ariel Lellouch
Geophysics Publication Lead

Steve Sloan
The Leading Edge Publication Lead

SEG WORKSHOP

APPLICATIONS OF MACHINE LEARNING
AND AI IN GEOPHYSICS

19-21 OCT 2021 • VIRTUAL ▶

Call for Abstracts



Application of Proximal and Remote Sensing Technologies for Soil Investigation

17-19 August 2021 • Virtual Event • [Event Webpage](#)

There have been substantial recent advances in soil science regarding the use of proximal and remote sensing technologies, not just employing these two technologies separately, but also in combination, such as new sensor platform integrations and fusion of proximal and remote sensing datasets to improve soil characterization and mapping. This symposium will provide a unique opportunity that brings together scientists and engineers across a range of disciplines to explore the combined potential of proximal sensing (i.e. near surface geophysics, soil profile probes, etc.) and remote sensing (i.e. UAV, aircraft, and satellite imagery) technologies as related to soil science applications. The first two days of the symposium will have technical sessions and panel discussions on potential topics listed below.

The final day of the symposium will be devoted to a short course titled, “**Bring Your Sensor Data Management and Processing into the 21st Century!**” Many of us are familiar with the challenges of data management and processing; especially dealing with large, disparate, and frequently evolving datasets! The interactive short course presented will feature several topics covering modern tools and techniques to improve the storage, management, and processing of proximal soil sensing data obtained for soil investigation. The overall goal of this workshop will be to raise awareness of emerging computing techniques and systems. It will benefit those new to proximal soil sensing and more experienced practitioners alike.

Abstract Submission is open until June 15, 2021. Send your abstract to ns@seg.org with *Application of Proximal and Remote Sensing Technologies for Soil Investigations Abstract* in the subject line. Format: 400-600 words; Times New Roman, 12 pt font; may contain 1-2 images/graphs/tables; must be fully captioned. Please contact Barry Allred, (barry.allred@usda.gov), Craig Lobsey (Craig.Lobsey@usq.edu.au) or Laurie Whitesell (lwhitesell@seg.org) with questions.

Stay in Touch with SEG & NSTS

Have you renewed for 2021?

Get involved

- ✓ NSTS-leadership elections
- ✓ NSTS leadership and non-leadership positions
- ✓ Mentoring365 as mentor or mentee

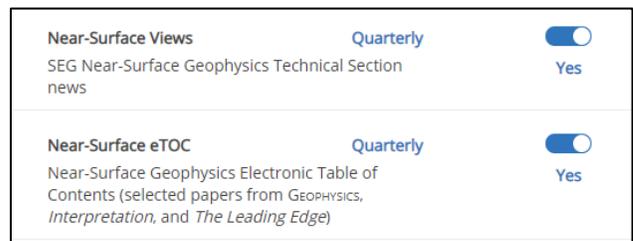
Get access

- ✓ SEG journals and other publications online
- ✓ Quarterly newsletters
- ✓ Quarterly Electronic Table of Contents
- ✓ Quarterly TLE Near-Surface Geophysics non-technical focused article

Get discounts

- ✓ Annual Meeting members registration rate
- ✓ Get Recognized
- ✓ Harold Mooney Award
- ✓ Near-Surface Student Research Award
- ✓ Best Student Chapter Near-Surface Newsletter Article Award

If you have not already, *opt-in* to receive our communications. From your member account page, go to 'My Communications' on the left-hand side menu. Be sure you are receiving communications from SEG and NSTS.



Has your company considered a Corporate

Membership? The benefits enjoyed by Corporate

Members include a listing on SEG's exclusive [Corporate Member page](#) and in the official Annual Meeting program. Corporate Members also benefit from right to publish affiliation with SEG and use the SEG corporate logo.

**Check the [SEG Dues Structure](#) for more details on publications and information about due-paying assistance.*

Technical Section Leadership Elections



Speaking of member perks, be on the lookout for an email with a link to vote in our next election. Voting will open on June 1, 2021 and close on July 1, 2021. Be sure to have your voice heard and cast your vote for the technical section's next Chair-Elect, Vice Chair, Vice Chair of Committees, and Global Chair. *Remember only current members of the SEG Near-Surface Geophysics Technical Section are eligible to vote.* You may review the candidate's biography and position statement at

<https://seg.org/News-Resources/Near-Surface/Near-Surface-Elections>.

Chair Elect

Lee Slater

Vice Chair

Blair Schneider

Peter Bassey

Vice Chair of Committees

Nadia Fantello

Morgan Sander-Olhoef

Global Chair

Elita Li

Hitoshi Mikada

NSTS Annual Photo Contest: Call for Submissions

Do you have a research-related photo you would like to submit? This year's NSTS Photo Contest is open until 1 Sept 2021. Contest opening will be announced on social media and the next newsletter. Email your submission to ns@seg.org. Voting period will be from September 3-25, 2021 by link found on the Near-Surface Geophysics page, www.seg.org/ns. A \$50 voucher to the SEG Online Store for 1st place within each contestant group. Winners will be announced by personal email and promoted in social media. By submitting a photo, you are giving SEG and the NSTS of SEG permission to use your photo for promotional purposes. [Submit here!](#)

One Photo; One Sentence

Eligibility Requirements

Students: Must supply degree level and expected graduation date.

Emerging Professionals: Must supply most recent graduation date and degree level

All contestants: Must have an active SEG-NSTS membership as of 1 Sept 2021. One single-photo submission per contestant.

Judging Criteria

Composition: How well does the photo illustrate near-surface geophysics in the field? Is the picture well framed with the subject of the photo in focus? Is the photo visually pleasing to the viewer?

Safety: All participants in the photos should be wearing appropriate safety equipment based on the job being conducted and location of the field work. Final determine of appropriate safety gear is made by the evaluation committee. Guidelines provided by the SEG Health and Safety Committee can be found at www.seg.org/ns.

SEG/AAPG International Exposition and 91st Annual Meeting



Session Title (<i>virtual</i>)	Date	Co-Chairs
SS-1 Application for Archaeology, Void, and Target Detection	29 Sept 1:20-5:20 (oral)	Blair Schneider and Gregory Tsokas
SS-2 Geophysics in support of Characterization and Reclamation of former Industrial Sites	29 Sept 8:00-12:00 (oral)	Lee Slater and Christine Downs
SS-3 Geoscientists <i>Without Borders</i> ®	28-Sept 8:00-12:00 (oral)	Cengiz Esmersoy
SS-5 New Instrumentation	27-Sept 1:20-5:20 (oral)	Cathy Truffert and Irina Filina

SS-7 SEG/AGU Hydrogeophysics	28 Sept 1:20-5:20 (oral)	Morgan Sander-Olhoeft and Niels Grobbe
SS-8 Urban Geophysics and Geophysics for Sustainable Urban Development	29 Sept 1:20-5:20 (oral)	Arthur Cheng and Iga Pawelec
NS-1 Advanced Processing and Machine Learning	29 Sept 8:00-12:00 (oral)	John Goff and Niels Grobbe
NS-2 Seismic for Near Surface Alterations and Voids Detection	28 Sept 8:00-12:00 (oral)	Steve Sloan and
NS-P1 Urban, Geotechnics and Paleontology	28 Sept 1:20-5:20 (poster)	Cathy Truffert and Tonian Robinson
NS-P2 Imaging	28 Sept 8:00-12:00 (poster)	Christine Downs and Chester Weiss
NS-P3 Water and Environmental Issues	27 Sept 1:20-5:20 (poster)	Sarah Morton Rupert and Noah Michael Dewar
NS-P4 Potential Methods and Interferometry	29 Sept 8:00-12:00 (poster)	Jose Arce and
Workshop Title	Duration/Date	Committee
W-4 Grand Challenges Workshop	1 day Sept 30 8:30 AM	Robert Wiley, Sarah Morton Rupert, John Goff, and Cathy Truffert
W-13 Geophysical Methods and Applications for Sustainable Cities	0.5 day Oct 1 8:30 AM	Arthur Cheng, Elita Li, Iga Pawelec, and Erika Gasperikova
W-6/W-14 Magnetic Method for Near-Surface and Mining Applications: In memory of Afif Saad, Part 1	Part 1, 0.5 day Sep 30 1:30 PM	Irina Filina, Sergio Espinosa, Jose Arce, Jiaia Sun
	Part 2, 0.5 day Oct 1 8:30 AM	
W-3/W-11 Filling in the gaps: The role of Multi-physics to Understand Geologic and Mineral Systems, Part 1	Part 1, 0.5 day Sep 30 1:30 PM	Ben Drenth, Ed Biegert, Anne McCafferty, Andrea Balza, Simon Gozzard, Irina Filina, Ken Witherly, Glenn Chubak
	Part 2, 0.5 day Oct 1 8:30 AM	

Call for Contributions

Post-SEG2021 workshop W-6/W-14: Magnetic Method for Near-Surface and Mining Applications: In memory of Afif Saad

Magnetic data provide important information about subsurface structures in a wide range of applications. Notable examples include engineering, environmental, geothermal, archeological, energy, and mineral exploration. In memory of a potential field pioneer Afif Saad and to showcase the use of magnetics in and beyond resource exploration, the Gravity and Magnetics Committee in collaboration with the Near Surface Technical Section and the Mining Committee is organizing a workshop focused on various applications of

the magnetic method. ***We welcome contributions from a broad range of subjects including, but not limited to:***

- New developments in instrumentation and acquisition, such as deep-tow or drone-based magnetics and magnetic gradiometry,
- Advances in data processing methodology, such as denoising and leveling,
- Applications of machine learning to magnetic data processing and interpretations,
- Anomaly enhancement techniques,
- Interpretation of magnetic data complicated by remanence, such as 3D magnetization vector inversions,
- Recent developments of the open-source frameworks, such as SimPEG and PyGMT,
- Case studies of a magnetic method for various applications listed above.

The workshop is intended for a broad geoscience audience interested in learning how magnetics can help to make discoveries and provides solutions to a wide range of problems. This workshop will include oral and poster presentations, followed by a panel discussion with invited speakers about how to maximize the use and value of magnetics for various applications. This workshop will offer an inspiring opportunity for students, the early- and mid-career participants to explore new career directions as it will emphasize various applications of the magnetic method to a wide range of scientific and applied problems. Please contact Irina Filina (ifilina2@unl.edu) with questions and contributions.

Post-SEG2021 workshop W-3/W-11: Filling in the gaps: The role of Multi-physics to Understand Geologic and Mineral Systems

As demands for metals increase globally, many national governments have initiated programs toward critical mineral mapping that leverage legacy potential field data combined with newly acquired data at national to global scales. Potential field data provide an essential framework for integrated analysis as the gravity and magnetic data are available over reconnaissance to tectonic scales and importantly, are most often publicly available. Synthesis of multiple geophysical datasets to image the concealed parts of the geology is crucial for a wide range of resource applications that cannot be done using a single geophysical method. They are particularly useful in mineral system studies, and given the recent shifts toward renewable energy, represent crucial datasets for mapping mineral systems that host critical metals - the crucial components for numerous applications.

This set of two half day-long workshops feature applications that incorporate potential field data toward understanding various geological and mineral systems. ***We encourage submissions from government, academia, and industry that demonstrate how potential fields are filling the gaps in our knowledge in understanding both commercial and non-commercial geology.*** Geophysical studies that integrate gravity and magnetics with radiometric, electromagnetic, thermal, and seismic methods from deposit to plate scales are encouraged. This session will have oral presentations mixed with posters and will feature several keynote speakers. The first half day (W-3) will focus on big concepts and the second half-day (W-11) on more specific geophysical ideas and examples. The workshop will contain interactive activities for the participants to discuss such as:

- What do concepts of criticality imply about the future of natural resource extraction?
- How can mineral systems concepts be leveraged to improve exploration outcomes?
- What are appropriate roles for geophysics in maximizing the effectiveness of mineral systems models and characterizing critical mineral resources?

Should you have any questions about the Gravity and Magnetic Committee or need more information about any of these events, please contact Irina Filina (ifilina2@unl.edu).



News from NSTS Student Subcommittee Calendar

As always, please visit the [Near Surface Facebook page](#) for more information about our student events or reach out (ns@seg.org). Note that *Pub Club* is on hiatus until the fall.

Open Now	Photo Contest	Submissions open for the Near-Surface Geophysics Technical Committee Annual Photo Contest. Full details in this newsletter. Submit here
August 19 11 am CDT	Q3 call	Student Subcommittee quarterly meeting with leadership to share news from SEG student chapters and discuss issue that are paramount for near-surface geophysics students. All are welcome! Zoom link
September 20 & 27	Workshop	Near-Surface Geophysics Student Application Exchange Workshop. The event will be held virtually on September 20th and in person at the Annual Meeting on September 27th. See full details below. Zoom link
Summer (TBA)	Travel Grant	Deadline to apply for the SEG Technical Program Travel Grant. Apply to receive full expense coverage to the 2021 Annual Meeting. Apply here
August 18 1-3 pm CDT	GEM Career Panel	The SEG Gravity and Magnetic Committee virtual GEM Career Panel (Gravity, EM, and Magnetics)

Near-Surface Student Application Exchange Workshop

Please join the SEG Near-Surface Geophysics Student Subcommittee for our annual *Near Surface Student Application Exchange*. Meet professionals with expertise and experience in a variety of near-surface geophysics methods and applications. Learn about the current near surface geophysics work being doing and the merits of employing near-surface geophysics to help solving challenges within the geosciences and beyond.

Don't miss this opportunity to speak with experts in an informal setting. Network with your like-minded peers. Come ready to engage and ask questions.

This event will be held virtually on **September 20, 2021** and again, in person, at the Annual Meeting on **September 27, 2021**. [Register now!](#)

GEM Career Panel

The SEG Gravity and Magnetic Committee invites undergraduate and graduate students to attend virtual GEM Career Panel (Gravity, EM, and Magnetics) on **Wednesday, August 18, 2021 from 1 pm to 3 pm CDT**. The panel consists of professional geophysicists from various sectors, such as major petroleum operators, large service contractors, smaller independent companies, and academic research institutions. Our diverse set of panelists are at various career stages and have switched from one sector to another, but still managed to find a niche to apply their GEM fundamentals to not only make a living but also to pursue a fun and exciting career in this special sector of Geophysics. The main goals of our event are not only to promote the GEM methods in geophysics and illustrate their great value (despite being one of the cheapest datasets to acquire), but also to outline a wide range of potential applications that go beyond the petroleum industry and introduce students to some of their potential mentors! We invite students to come to this informal virtual event to explore the variety of career options within the GEM methods and to ask punchy questions to professionals (both as a group, and one-on-one) about their career paths, rewards, and obstacles they encountered throughout their career. **Follow us on our social media to stay up to date** as more information becomes available, including who our panelists will be!

Twitter ([@SegGravMag](#)) • LinkedIn ([Potential Fields – Magnetic Personalities](#))

Mentoring

[Mentoring365](#), a virtual mentoring program supported by the American Geophysical Union, Society of Exploration Geophysicists, Association for Woman Geoscientists, and other organizations to quickly connect students with geoscientists across various institutions and disciplines. All SEG student members are encouraged to participate. Apply now and begin developing personal and professional relationships with others geoscience professionals. We encourage members further along in their career to consider applying to be a mentor and part of the knowledge and skills transfer.



Calendar of Global Events

Events	Location	Date(s)	Submissions	Registration
Application of Proximal and Remote Sensing Technologies for Soil Investigations	Virtual	17-19 August 2021	<i>Closing Soon</i> 15 June 2021	1 June 2021
Near Surface Geoscience Conference & Exhibition 2021	Bordeaux, France & Virtual	29 Aug- 2 Sept. 2021	Closed	Open
AGUSEG Near-Surface Imaging with Full Waveform Inversion: Theory and Applications	Virtual	21 Sept 5 Oct 19 Oct. 2 Nov. 2021	Closed	Open

<u>14th SEGJ International Symposium</u>	Virtual	18-21 October 2021	Closed	Open
<u>2021 SEG Annual Meeting</u>	Denver, CO, USA & Virtual	26 September -1 October 2021	Closed	Open
<u>Balkan Geophysical Society Congress 2021</u>	Bucharest, Romania	10-14 Oct. 2021	15 Aug 2021	Open
<u>6th International Conference on Engineering Geophysics (ICEG)</u>	Al Ain, UAE	25-28 October 2021	5 July 2021	TBA
<u>2021 Summit on Drone Geophysics</u>	Virtual	2-5 November 2021	20 Aug 2021	10 Aug 2021
<u>1st EAGE Conference on Near Surface in Latin America</u>	Bogota, Colombia & Virtual	3-5 November 2021	Closed	Open
2 nd Latin America Virtual Student Conference	Virtual	9-10 November 2021	TBA	TBA
5 th Europe and Eurasia Virtual Student Conference	Virtual	11 November 2021	TBA	TBA
<u>2nd Geosciences & Engineering in Energy Transition Conference</u>	Strasbourg, France & Virtual	23-25 November 2021	Closed	Open
<u>EAGE/Aqua Foundation Second Indian Near Surface Geophysics Conference & Exhibition</u>	Virtual	23-26 November 2021	20 August 2021	Open
<u>4th Asia Pacific Meeting on Near Surface Geoscience & Engineering</u>	Ho Chi Minh City, Vietnam & Virtual	30 Nov- 2 Dec. 2021	30 June 2021	TBA
<u>International Workshop on Advanced Ground Penetrating Radar 2021</u>	Valletta, Malta	1-4 December 2021	30 June 2021	Open
<u>AGU Fall Meeting</u>	New Orleans & Virtual	13-17 December 2021	4 Aug. 2021	Aug. 2021
<u>Geo-Congress 2022</u>	Charlotte, NC, USA	20-23 March 2022	Closed	13 October 2021

Professional Resources

Professional Resources

[8 Tips to Improve your CV](#)

[The Importance of Strategic Post interview
Follow-Up](#)

[Four Ways to Influence your Bosses without
Alienating them](#)

[Practicing Leadership as an Introvert](#)

[How to Plan for Strategic Planning](#)

[How to Teach a Good First Day of Class](#)

[Ways to Juggle Fieldwork with Kids in Tow](#)

How to Video Series by the EAGE

How to Submit a Good Abstract. [Part 1](#) • [Part 2](#)

How to Get Published. [Part 1](#) • [Part 2](#)

How to Present to a Live Audience. [Preparation](#)

Job Postings & Career Resources

[SEG Career Center](#)

[AGU PathFinder Career Center](#)