



**Near-Surface Geophysics Focus Group
Newsletter: February 2017**

Dear Colleagues,

The latest Near-Surface Geophysics focus group (NSFG) newsletter is now available. Please see the [full version online](#)

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Recent announcements of interest to the NSFG community (conferences, academic positions, graduate student opportunities, etc.) can be found on the [AGU Near-Surface Geophysics focus group website](#).

Early-career scientists: Check out the [NSFG early-career website](#).
Follow NSFG on [Facebook](#) and Twitter [@NS AGU!](#)

Best regards,
Sarah Kruse
President, Near-Surface Geophysics Focus Group, AGU

Near-Surface Geophysics Focus Group (NSFG) February 2017 Newsletter

Upcoming Meetings at a Glance

Meeting (click to go to website)	Location	Meeting Dates	Submission	Registration
<u>SAGEEP 2017</u>	Denver, Colorado	19–23 March 2017	Closed	Early registration ends: 15 March 2017
<u>3DEM-6</u>	Berkeley, California	28–30 March 2017	Closed	Registration ends: 17 February 2017
<u>European Geosciences Union General Assembly</u>	Vienna, Austria	23–28 April 2017	Closed	Early registration ends: 16 March 2017
<u>NovCare 2017</u>	Dresden, Germany	6–9 June 2017	27 February 2017	Early registration ends: 1 April 2017
<u>3rd AGU-SEG Hydrogeophysics Workshop</u>	Stanford, California	24–27 July 2017	23 February 2017	Registration opens: April 2017 Early registration ends: 31 May 2017
<u>IAPSO-IAMAS-IAGA 2017 Joint Assembly</u>	Cape Town, South Africa	27 August to 1 September 2017	12 March 2017	Early registration ends: 16 March 2017
<u>EAGE Near Surface Geoscience 2017</u>	Malmö, Sweden	3–7 September 2017	15 April 2017	Early registration ends: 5 May 2017
<u>4th ICEG</u>	Al Ain, United Arab Emirates	9–12 October 2017	1 April 2017	TBA

Upcoming Events

- 31 January: Submission site for [GSSI Student Grant](#) applications opened

Applications are now being accepted for the Geophysical Survey Systems, Inc. (GSSI) Student Grant, which awards up to \$2000 to AGU student members who have designated the Near-Surface Geophysics focus group as one of their AGU affiliations. If funding exists, more than one award may be made in a year. In addition to the cash award, GSSI will make loaner equipment available for the winner(s). GSSI will coordinate equipment loan directly with the winner(s) and do their best to coordinate any necessary GSSI equipment available. This grant is being established through the generosity of GSSI to support AGU's Near-Surface Geophysics focus group's student scientists conducting field geophysical research using ground-penetrating radar and electromagnetic methods. **Deadline is 1 April.**
- 31 January: Submission site for [Horton Hydrology Research Grant](#) applications opened

Applications are now being accepted for **Horton Research Grants** granted to up to three awardees, bestowed each year to support Ph.D. candidates in hydrology or water resources

research. The Horton Research Grant was first awarded in 1983 to Jane L. Stockman. **Deadline is 15 April.**

- [SAGEEP 2017: Registration](#) is open for the 30th Annual SAGEEP in Denver, Colorado, 19–23 March 2017

This year, the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) will be colocated with the National Ground Water Association's (NGWA) spring meeting on 20 and 21 March, bringing together a diverse audience from a wide range of backgrounds. All technical sessions will be open to both groups. In addition to the SAGEEP technical program, the NGWA conference will feature talks and posters focusing on two topic tracks: “Applications of Hydrogeophysics to Groundwater Characterization, Monitoring, and Management” and “Deep Groundwater Applications.” Visit the website for details on the technical program, [luncheons](#), a special SAGEEP/NGWA reception, short courses, and [all the events and activities](#). When registering, have your login information handy.

- 6–8 February: Editors in Chief Retreat

- 13 February: SEG Distinguished Instructor Short Course by Doug Oldenburg at National University of Singapore

Traveling worldwide, Dr. Doug Oldenburg is presenting the Society of Exploration Geophysicists (SEG) 2017 Distinguished Instructor Short Course (DISC) on **Geophysical Electromagnetics: Fundamentals and Applications**. The course will be held in roughly 30 [locations around the world](#) and will cover applications of electromagnetic geophysics across mining, oil and gas, geotechnical, water, and environmental industries.

The 2017 DISC covers fundamentals and applications of electromagnetic (EM) geophysics. Local case histories pertaining to problems in resource exploration, including oil and gas, minerals, water, environmental, and geotechnical areas, will be used as motivation for investigating fundamentals of electromagnetics. The aim of this course is to equip participants with sufficient fundamental understanding and resources about EM geophysics so that they can decide whether an EM technique can help solve their problem, select which type of survey to use, and set realistic expectations for what information can be gleaned. For more information, please see online resources [here](#).

- 16 February: Spring [Virtual Poster Showcase](#) (VPS) opens

VPS is a low-cost, high-value online poster presentation opportunity that allows students to share their research without having to travel to a conference. Students are guided through the essential peer-review process, during which they learn to evaluate research. Student receive a citation for their abstract and a certificate of participation after completion of the showcase. The grand prize winner will receive funding toward lodging and airfare as well as a complimentary registration for the 2018 Fall Meeting, be sure to also check out the [Fall 2016 winners](#). Online abstract submissions close: **7 March**.

- Late February: [AGU Fall Meeting](#) session proposal site will open

Upcoming Deadlines

- 17 February: Registration deadline for 6th [International Symposium on 3-D Electromagnetics](#) (3DEM-6) on 28–30 March 2017 at the University of California, Berkeley
The workshop invites contributions for oral and poster presentations on theory, developments, and applications of 3-D electromagnetic forward and inverse modeling in Earth science and other areas. We especially welcome papers on new applications and case studies, both fully successful studies and those with lessons learned for future work. Developments in fast and accurate 3-D and 4-D modeling and inversion algorithms are welcome, as are new techniques for accessing uncertainty and resolution. This symposium is really a workshop, and we strongly encourage presentations of work in progress. Ample time will be allocated for discussion at the end of each session. Posters will receive equal attention with devoted poster-only sessions during the symposium. Planned sessions include
 - forward modeling
 - inversion modeling
 - uncertainty and resolution analysis
 - model studies
 - applications
- 23 February, 12 p.m. Eastern Standard Time: Abstract submission deadline for the [AGU-SEG Hydrogeophysics Workshop](#) on 24–27 July 2017 at Stanford University
Abstracts are now being accepted for the following sessions: (1) Interfaces in the Critical Zone, (2) Hydro-bio-geo-chemical Processes in the Critical Zone, (3) Critical Zone Properties and Rock Physics, and (4) Scaling up of Geophysical Data to Address Critical Zone Science Questions. Each session will begin with two invited talks: one hydrogeophysicist and one critical zone scientist. All other presentations will be posters. Presenters are allotted 3 minutes to introduce their poster prior to audience viewing. To encourage the exchange of ideas and development of new collaborations, we will have all lunches and one dinner together. The [preliminary program](#) and [session descriptions](#) are now available.
Abstract acceptance and the final program will be announced 22 March 2017. Registration is US\$500 for regular attendees and US\$300 for students and includes admission into scientific sessions, the ice breaker reception, breakfast, lunch, and the banquet dinner.
- 27 February: Abstract submission deadline for Novel Methods for Subsurface Characterization and Monitoring: From Theory to Practice ([NovCare 2017](#)) on 6–9 June 2017 in Dresden, Germany
NovCare 2017 will again provide an outstanding platform for researchers and practitioners from all over the world to share research on innovative methods for characterization and monitoring of aquifers, soils, and watersheds. NovCare 2017 is the fifth edition of a successful biannual conference series and will focus on two main topics:
 - Environmental sensors at all scales: How to combine information from remote sensing, ground-based geophysics, direct-push-based methods, and point sensor systems
 - Benchmarking models with real-world data: How to get high-quality data in the field and how to use these data for reliable model predictionsConfirmed keynote speakers:
 - James Butler (Kansas Geological Survey)
 - Johann Frank (JR-AquaConSol)
 - Gudrun Massmann (University of Oldenburg)
 - Uwe Meinberg (BTU Cottbus-Senftenberg)

- Henning Prommer (CSIRO)
- Kamini Singha (Colorado School of Mines)
- Lee Slater (Rutgers University)
- Albert Valocchi (University of Illinois)

- 12 March: Abstract submission deadline for IAPSO-IAMAS-IAGA 2017 Joint Assembly on 27 August to 1 September 2017 in Cape Town, South Africa

There is a session in near-surface electromagnetic geophysical studies that will be offered at the upcoming [IAGA meeting](#). This year it is a joint assembly with the International Association of Geomagnetism and Aeronomy (IAGA), International Association for the Physical Sciences of the Oceans (IAPSO), and International Association of Meteorology and Atmospheric Sciences (IAMAS). We hope you will submit an abstract and to see you in Cape Town!

IAGA Session A-37: Electromagnetic contributions to hydrological, archaeological, and other near-surface studies. Conveners: Gad El-Qady and Mark E. Everett

This symposium will host a presentation on the contributions of electromagnetic geophysical methods for near-surface applications. The electromagnetic technique is one of the most powerful tools for imaging the electrical conductivity and structure of the Earth. This method is being extensively used for exploration of the near surface for structures of interest related to groundwater, hydrocarbon, geothermal, earthquake hazard, waste characterization, and archaeological studies. The results derived from this method are controlled by the frequency/period of excitation and the resistivity/conductivity of the formations to arrive at well-constrained depth sections and models to guide drilling and/or excavations. On the other hand, developments in the past 2 decades in instrumentation, data processing, and interpretation methodologies (algorithms, etc.) and access to powerful computers have enabled innovation throughout all aspects of electromagnetic geophysics. We are pleased to invite researchers to submit abstracts of their studies related to the above topics. Integration of these results with other information (for example, geophysical, geological, geochemical, and tectonic) is indeed interesting and encouraged. Contributions to any of the above subjects are particularly welcome.

- 1 April: Deadline for [SEG 2017 call for abstracts](#)

The SEG International Exposition and 87th Annual Meeting in Houston will provide vast amounts of cutting-edge technical insight, high-level networking, and new business development opportunities across multiple disciplines of the geosciences sector, including global oil, gas, mineral exploration, near surface, archeology, and more.

- 1 April: Abstract submission deadline for the 4th [International Conference on Engineering Geophysics \(ICEG\)](#), 9–12 October 2017 in Al Ain, United Arab Emirates

The United Arab Emirates University (UAEU) and Al Ain City Municipality (AAM), in partnership with the Society of Exploration Geophysicists (SEG), are proud to announce the Fourth International Conference on Engineering Geophysics (ICEG). This conference will take place at UAEU in the Crescent Building conference auditorium.

The objectives of ICEG 2017 are global innovation, creativity, advances, and new approaches in engineering/environmental geophysics and related fields. In addition to core engineering/environmental and geotechnical focuses of this coming event, special sessions in applications to archaeology, energy, and forensic geophysics will be held. Furthermore, international experts at the cutting edge of their science will deliver keynote presentations on their

latest research, experiences, future goals for engineering/environmental geophysics, and raising public awareness on the critical role of near-surface geophysics.

Announcements

Letter from incoming president Sarah Kruse

I am so excited to be serving as the president of the Near-Surface Geophysics focus group, which has grown to be such a welcoming hub for diverse science exchange at AGU. And the transition has been eased because past-past-president George Tsoflias and past-president Fred Day-Lewis did a great job. I also want to thank Xavier Comas, who balanced scheduling conflicts for near-surface sessions at the AGU Fall Meeting with biogeo, hydro, cryo, seismic, tectonic, volcanic, etc., as well as anyone possibly could have, and Andy Parsekian, who has agreed to step up for the 2017 Fall Meeting (and hopefully more). Xavier joins the AGU Council now as the NSFG president-elect.

For the regular NSFG newsletter and website updates over the past few years we need to thank Burke Minsley and Juan Lorenzo, respectively. If you are affiliated with other sections and focus groups, you know that ours has always been the most reliable and useful. Chi Zhang (NSFG secretary) and Trevor Irons are the new contacts for the newsletter and website, respectively. Although the newsletter may appear to be coming from me, the hard work behind it is all from Chi.

The 2017–2018 Near Surface Geophysics Focus Group Executive Committee now looks like this:

Fred Day-Lewis, Past-President
Sarah Kruse, President
Xavier Comas, President-Elect
Chi Zhang, Secretary
Andy Parsekian, Meetings Committee Representative
Trevor Irons, Web Editor
Sarah Morton, Student Representative (thanks for staying on, Sarah!)
Anja Klotzsche, Early Career Representative
Sander Huisman, Hydrogeophysics Liaison; European Representative
John Lane, SEG Liaison
Kennedy Doro, African Representative
Juan Lorenzo, South American Representative

We also maintain a Fellows Committee, a GSSI Student Award Committee, and an AGU-SEG Collaboration Committee and would welcome volunteers.

This year's Outstanding Student Poster Award winners reflected the exciting and diverse kinds of science we have been seeing at NSFG sessions at AGU and will receive \$400 and a ticket to the 2017 NSFG Luncheon. Congratulations to

- **Daniel Blatter**, University of California, San Diego, "Bayesian Inversion of 2D Models from Airborne Transient EM Data"
- **Farzaneh Mahmood Poor Dehkordy**, University of Connecticut, "Studying Exchange with Less-Mobile Porosity at the Laboratory Scale: Experimentation and Multiphysics Simulations"
- **Chao Gao**, University of Maryland College Park, "Quantifying the Uncertainties and Multi-parameter Trade-offs in Joint Inversion of Receiver Functions and Surface Wave Velocity and Ellipticity"

- **Samuel Kachuck**, Cornell University, “Sloppy Inversion and Optimal Experiment Design for Last Glacial Maximum Barents Sea Ice Sheet Configuration”
- **Adam Nielson**, Colorado State University, “Using Synthetic Forward Seismic Models of Channelized Deep-Water Slope Deposits to Inform Stratigraphic Interpretation, Tres Pasos Formation, Magallanes Basin, Chile”
- **Kirk Scanlan**, University of Alberta, “Difficulties in Interpreting Ballast Degradation Level Estimates from Synthetic Ground-Penetrating Radar Data”

You can find a comprehensive update on the focus group activities in Fred’s PowerPoint from the AGU 2016 focus group luncheon [here](#).

Over the next couple years, we hope to bring to the NSFG community an *early-career award*. Whether this award can come with a stable financial prize remains to be seen.

Our hope that AGU will create a *synthetic listing of near-surface geophysics articles* as they appear in AGU and non-AGU journals has been deferred for about a year as AGU and Wiley incorporate a new indexing method.

[Contributions](#) to the focus group are always welcome, and AGU contributes further if we receive donations of \$50 or more from more than 5% of members with NSFG as their primary affiliation.

If you feel that we are aligned with your interests, please make Near-Surface Geophysics your primary AGU affiliation. It brings resources our way! (Go to www.agu.org, click on Member Login, which will bring you to the My AGU page, scroll down a bit, and you will see a box to change your affiliation.)

One of the best things about serving as president-elect over the past 2 years was participating in the AGU Council. It has been such a learning experience watching good leadership in action—from the CEO Chris McEntee through all levels and including exceptional staff. I hope you share my sentiment of AGU as a dynamic organization looking out for all its membership. Please let me know what the Near Surface Geophysics focus group could help you with in 2017!

[Sarah Kruse](#), University of South Florida

- **Need your input: Geoscience field camp mapping by lidar**, from Ramesh Shrestha, director of National Center for Airborne Laser Mapping (NCALM)
The National Science Foundation–funded program NCALM is exploring the possibility of developing spatial and spectral databases for most, if not all, of the geoscience field camps in the United States by collecting airborne and terrestrial lidar, RGB digital photography, and hyperspectral scanning observations of the areas used to train students. NCALM and its steering committee members have been discussing the viability of such a project for years. It will involve preparing and submitting a successful proposal for required funding and will take a number of years to collect the observations for all of the field camps. We believe that the collected research quality data sets will greatly benefit the students, as well as professors and researchers in many geoscience disciplines.
Before we begin work on such a proposal, we are requesting your help in gathering accurate up-to-date information about each of the field camps. For more information, please email [Ramesh](#). It would be helpful if you could provide your input by 20 February 2017. Thank you.
- **2017 AGU Honors Nominations Now Open**
Nominations for the 2017 AGU Union awards, Fellows, medals, and prizes and section and focus group awards are now open. We urge you to take this opportunity to nominate a student, colleague, peer, or

mentor whose achievements have made a difference in the Earth and space sciences. As part of the section and focus group ownership and involvement in AGU's Honors Program, you are urged to create Honors Nominating Committees, if these committees are not yet in place. The charge of this group is to identify who in your community has not been recognized for any of AGU's honors and should be. The goal is to increase diverse nominations in AGU's Honors Program for the number of nominations for women, international members, and underrepresented groups. Visit the [AGU Honors Program online](#) and contact [George Tsoflias](#), NSFG Nominations Committee chair, for more information.

- 16–20 February: American Association for the Advancement of Science Annual Meeting

NSFG Student Spotlights and Research Highlights

Rebekah F. Lee, Boise State University

While Rebekah Lee was finishing her undergraduate coursework, she was considering ways to become better acquainted with geophysical research projects beyond what could be read in textbooks. Much to her delight, she was accepted into the 2014 Incorporated Research Institutions for Seismology (IRIS) internship program and appointed to an ongoing project investigating Alaskan permafrost with Hunter Knox and Robert Abbott at Sandia National Laboratories. This pivotal experience, which exceeded Rebekah's expectations, solidified her decision to pursue a career in geophysics. As part of her internship, she attended the 2014 AGU Fall Meeting to present the results of her research on the



use of the horizontal-to-vertical spectral ratio (HVSr), an ambient noise seismic technique, to evaluate seasonal variations in permafrost thickness outside Fairbanks, Alaska. Rebekah embraced this first conference opportunity and explored the diverse geoscience community at AGU to see where research could take her next. It was at this meeting that she was introduced to her now graduate school adviser, Dylan Mikesell, who welcomed her into the Environmental Seismology Lab at Boise State University the following year. Rebekah's master's thesis project utilizes total electron content (TEC) disturbances from shallow earthquake GPS information to determine how changes in the TEC can be used to measure pressure wave characteristics.

Rebekah's early career actually started with teaching English as a second language after receiving her bachelor's degree in English from the University of North Carolina, Greensboro, in 2006. Although the 2008 market crash led her into an extended K–5 education position, something was missing. Rebekah evaluated her long-term goals and decided that this career was not how she wanted to have an impact on the world. She recalled her sole undergraduate physics with calculus course, where her professor suggested she complement her English curriculum with a physics degree. This inspired Rebekah to research careers in the physical sciences, and she discovered the website [beageo.com](#) by the University of Texas at Austin, which answered her call for where to go next. Rebekah became motivated to take basic calculus, geology, and physics classes at a local community college while teaching. She soon left teaching completely in late 2012 and enrolled full time at North Carolina State University with financial support from the American Association of University Women Career Development Grant in 2014. During her 2 years at North Carolina State, she found her footing and built the background she desired in geology, mathematics, and physics necessary for graduate study in geophysics.

Although only in her second year, Rebekah has received several other grants and honors recognizing her tremendous academic ambition, advanced writing skills, and fresh aptitude for research. These include the Allan V. Cox Student Research Award and the Parke D. Snavely, Jr., Cascadia Research Award from the Geological Society of America, which she used to travel to France to work with a research collaborator. She has also graduated from the Summer of Applied Geophysical Experience (SAGE) training program, the SEG ExxonMobil Student Education Program, and the Chevron Student Leadership Symposium. Rebekah returned to the AGU Fall Meeting in 2016 to present her ongoing master's research, "Imaging Earthquake Rupture on the Surface from Back Projection of Ionospheric Signals" (Abstract NH51A-1927). This year she anticipates completing her research project and either continuing on to a doctoral program or finding a research position in near-surface geophysics.

For more information on TEC disturbances and its application to ionospheric seismology, please contact [Rebekah Lee](#).

**Interested in being highlighted, or know a student who should be? Please email [Sarah Morton](#) for more information about the Student Spotlight. We are seeking research highlights that showcase use of near-surface geophysics in other [AGU sections and focus groups](#). If you are interested in writing a short, one-page highlight, please contact [Chi Zhang](#).*

To contribute material to the NSFG newsletter, send an email to [Chi Zhang](#).

Material must be received 5 full business days before the first of the month. All members are welcome to submit content of interest to the near-surface community. Please keep messages brief and provide contact information and (if available) a web address for additional information.

Get your message out to NSFG members faster.

You no longer need to wait until the end of the month to share an important or time-sensitive contribution via the newsletter. Appropriate contributions to the newsletter will also be shared ASAP via Twitter. Please note that only NSFG members who follow [@NS AGU](#) will receive Twitter announcements, so make sure that you sign up