Near-Surface Geophysics

Newsletter: June 2019

Dear Colleagues:

The latest Near-Surface Geophysics (NSG) section newsletter is now available. Please follow this link to see the full version online.

In this month's newsletter:

Recent announcements of interest to the NSG community (conferences, academic positions, graduate student opportunities, etc.) can be found on the AGU Near-Surface Geophysics section website.

Early-career scientists: Check out the NSG early-career website.

Follow NSG on Facebook and Twitter @NS_AGU!

Best regards,

Xavier Comas
President, Near-Surface Geophysics Section, AGU

1. UPCOMING MEETINGS

MEETING	LOCATION	DATES	SUBMISSION	REGISTRATION
AOGS	Suntec City, Singapore	28 July to 2 August 2019	Closed	Closed
SEG	San Antonio, Texas	15–20 September 2019	Closed	Early registration deadline: 30 July 2019
ICEG	Al Ain, United Arab Emirates	21–24 October 2019	Closed	Early registration deadline: 30 July 2019
AGU Chapman Conference	Valencia, Spain	21–24 October 2019	Open	Open late June
Geophysics in the Critical Zone	London, U.K.	11–12 November 2019	Open	Early registration deadline: 18 October

2. AGU UPDATES

Call for submissions to AGU Fall Meeting 2019

Interrelating Near-Surface Geophysics, Logging, and Sampling in Archaeological Research (Session NS008)

In archaeological and paleoenvironmental research, geophysical data can provide otherwise inaccessible quantitative information on the subsurface. To fully develop the potential of such data, integrating approaches from geophysics, geology, and archaeology is key and leads to a new class of surveys and analytical methods.

The goal of this session is to discuss novel ways to transfer data and results between disciplines and is aimed particularly at the integration of different invasive and noninvasive survey data. In archaeological applications, such synergy can increase the interpretive accuracy of geophysical data for investigating past natural and cultural subsurface variations. An example is the investigation of entire archaeological landscapes, which can now be approached more reliably by integrating geophysical data sets, providing continuous insight into subsurface variations, and facilitating more efficient invasive research.

The session targets researchers working in, or interested in, the developing field of combined quantitative analysis of geophysical, geological, and archaeological data.

Session conveners: Wolfgang Rabbel and Natalie Pickartz (Kiel University, Germany), Philippe De Smedt (Ghent University, Belgium), and Mark E. Everett (Texas A&M University, United States)

AGU Fall Meeting 2019

Where: George R. Moscone Convention Center
747 Howard Street
San Francisco, CA 94103

When: 9–13 December 2019

Registration: August–November 2019; late fee applies after 7 November

Abstract Submission Info

Deadline: 31 July 2019

Format:

Title: 300 characters

Text: 2,000 characters (excluding spaces)

More info and submission site link:

https://www2.agu.org/Fall-Meeting/Pages/Submit-anabstract

3. NEAR-SURFACE GEOPHYSICS UPDATES

- **Section Incentive Program: Please Consider Donating**

AGU launched the Section Incentive Program in 2015 to reward sections that had at least 5% of their primary affiliated members make contributions of $50 or more to any AGU fund, including the Austin Endowment for Student Travel. More details on the Section Incentive Program thresholds can be found here: http://sites.agu.org/leadership/sections-focus-groups/section-and-focus-group-incentive-program/.

AGU will be extending the program in 2019, and in the Near-Surface section we are currently at 3.15% of primary affiliates making a contribution of $50 or more, so we need just 1.85% more to start receiving incentives that will go toward our section events and student initiatives. That means we need only 11 more NSG primary affiliates to contribute $50 (or more) to start qualifying for this incentive. Please help our section! And remember that your contribution can go toward our section or toward any AGU fund.

- **NSG Student Spotlight**

Mackenzie Vecchio is a second-year Ph.D. student in the Department of Geosciences at Florida Atlantic University (FAU). Before coming to FAU, she attended Florida State University (FSU), where she double majored in geology and social science, graduating in 2017. During her time at FSU, Mackenzie worked on various botany surveying projects in wetlands but ultimately wanted to pursue something more in the geosciences. Until discovering her current adviser's work, she was not familiar with near-surface geophysics but soon found it to be a powerful tool for environmental characterization.

Mackenzie's research is currently focused on inferring the moisture content of tree trunks along elevation gradients using high-frequency ground-penetrating radar measurements. Much of this work is conducted in El Yunque National Forest in Puerto Rico, which is part of the Luquillo Critical Zone Observatory. While she has not yet attended an AGU Fall Meeting, she has plans to attend and present her research during Fall Meeting 2019.

For more information about her research, please contact Mackenzie Vecchio.

Interested in being highlighted, or know a student who should be? Please email Matthew Sirianni for more information about the Student Spotlight. We are also seeking research highlights that showcase the 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 Kisa Mwakanyamale.

4. NEAR-SURFACE GEOPHYSICS POSITION ANNOUNCEMENT

- **Seismic Unix Summer School in Pau, France, July 2019**

Reflection imaging is the highest-resolution geophysical tool used to investigate the subsurface. Its imaging concepts have been developed during the past decades for oil and gas seismic prospection, but they are also relevant to ground-penetrating radar (GPR) for very shallow surveys.

Seismic Unix (SU) has been developed during more than 30 years and is probably the most widespread free reflection imaging software.

SU is convenient to

- Teach seismics: SU uses simple elementary processing tools. The source code availability unveils the details of the processing.
- Process small to medium 2-D marine or land surveys: SU cannot compete with industrial-grade processing, but it allows one to process real-world seismic data.
- Process GPR data.
- Provide SME and independent consultants with a cheap but efficient software.

SU is not sold or supported by a company. The users community has to

- Fix the bugs: Like all software, SU has bugs!
- Enhance SU: SU has little support for 3-D surveys, statics computations, parallel computing, etc.
- Write and publish more tutorials and documentation: necessary to attract new users.
- Elaborate a road map for the future of SU: Where do we, the users, want to go with SU?

The SU summer school will try to address these two topics by gathering users and developers, beginners and skilled people.

You want to work with Seismic Unix?

Join us in Pau, France, from 8 to 19 July for the Seismic Unix summer school!

Don't expect to sit in a classroom all day listening to a teacher! Most of the time will be devoted to hands-on work!

Practical information:

The SU summer school is targeted at advanced students and young professionals, but experienced users are welcome. Applications must contain a short resume showing skills and experience and a motivation letter explaining what you expect from your participation.

The summer school spans 2 weeks. It is possible to attend only 1 week. If you can't come for 2 weeks, choose the first or the second one on the basis of your experience. The first week will be devoted to basic topics and the second one to more advanced matter.

Accommodation in university rooms or studios is for 2 weeks only. You can also register for the summer school without accommodation. Price includes lunches and coffee breaks and one dinner per week. Accommodation and travel grants will be available depending on the amount of sponsoring we can get.

Pau is located in southwestern France and is easily reached from Paris by plane (1.25-hour flight), high-speed train (4.5 hours), or bus (longer, cheaper). There are low-cost flights to Biarritz and Lourdes airports, too. Toulouse and Bordeaux airports are within 2 hours by bus or train. Pau is located on the highway that links the Mediterranean Sea to the Atlantic Ocean, north of the Pyrenees mountain range.

If you plan holidays in the area (before or after the SU summer school!), Pau is located 1.25 hours, by driving, from the Pyrenees mountains and from the Atlantic Ocean. Trains and buses are available.

The weather in Pau at the beginning of July is normally hot but is sometimes rainy and cool.

Prices (provisional):

- School fees: €120/week
- Accommodation: University room, €163; studio, €263 (for 2 weeks)

The SU summer school is supported by E2S UPPA (Energy Environment Solutions, University of Pau and the Pays de l'Adour): https://e2s-uppa.eu/.

For more information, contact dominique.rousset@univ-pau.fr.

- We are seeking a motivated scientist for the EMGS (Electromagnetic Geoservices) R&D group in Trondheim, Norway. In this group, we research new methods for processing, inversion, and interpretation of Magnetotellurics (MT) and controlled-source electromagnetic (CSEM) data. We also develop a world-leading EM software package.

If you are interested in this opportunity, please visit the following link to learn more about the position: http://www.emgs.com/content/820/Job-openings; or contact Jan Petter Morten (R&D manager) at jpmorten@emgs.com, emgs.com.

- **Seconded National Experts with Background in Geosciences**

The European Research Council (ERC) is looking for a Seconded National Expert with background in geosciences. The main tasks are related to evaluations and project follow-up. The deadline is currently 31 May, but it will be extended by up to 3 additional weeks.

For more details:

https://erc.europa.eu/about-erc/careers

https://erc.europa.eu/sites/default/files/document/file/SNE%20Call%20ERCEA_176_2019.pdf

Email: claudia.jesus-rydin@ec.europa.eu

Website: https://erc.europa.eu

- **Aarhus GeoSoftware: Two Positions**

Aarhus GeoSoftware (AGS) seeks two new employees within resistivity and induced polarization (ERT) geophysics to support the AGS software development of GeoTomo Res2DInv/Res3DInv and Aarhus Workbench software packages.

The positions are anchored in GeoTomo's Res2DInv and Res3DInv programs with developments of the inversion code, user interface, support, and sales, but also supporting the ERT modules of Aarhus Workbench.

The starting date is negotiable but will be within the third or fourth quarter of 2019. The positions are permanent.

The candidate will be part of a group of geophysicists and software developers with M.Sc. and Ph.D. backgrounds. AGS develops geophysical software for processing, inversion, and visualization of ERT and frequency domain and time domain EM for ground-based and airborne surveys with a focus on mapping of groundwater, geology and hydrogeology, raw materials, and contaminations.

Position 1

The applicant will be required to do ongoing development of the GeoTomo inversion code for Res2DInv and Res3DInv.

Qualifications

Education: Ph.D. degree in geophysics or physics from a renowned institution or university

Extensive experience in the following is mandatory:

Numerical analysis

Parallelization

Scientific programming

Finite element modeling

C++

Experience with the following is an advantage:

Geophysical field data acquisition

Processing and inversion of ERT data

GeoTomo Res2DInv and Res3DInv

Fortran

The applicant should expect 5–10 travel days per year.

Position 2

The applicant will be in charge of support, sales, documentation, and traveling for conferences and workshops worldwide.

The applicant will also be involved in the future development of the GeoTomo software for Res2DInv and Res3DInv. This includes design of a new user interface and testing of the codes and new tools. Furthermore, the applicant will participate in the development of the ERT module in Aarhus Workbench.

Qualifications

Education:

M.Sc./Ph.D. degree in geophysics from a renowned institution or university

Extensive experience in the following is mandatory:

GeoTomo Res2DInv and Res3DInv

Geophysical field data acquisition in general

Processing and inversion of ERT data

Time-lapse processing and inversion

Outgoing and service oriented

Fluent in spoken and written English

Experience in the following is an advantage:

Doing courses or lectures

Scientific programming

Making documentation

The applicant should expect 30–50 travel days per year.

Contacts

Applicants seeking further information are invited to contact CEO Toke Søltoft at toke@aarhusgeosoftware.dk.

5. FYI'S

I. 16th Annual Meeting of the Asia Oceania Geosciences Society (AOGS)

The Asia Oceania Geosciences Society (AOGS) was established to promote geosciences and its application for the benefit of humanity, specifically in Asia and Oceania and with an overarching approach to global issues.

The Asia Oceania region is particularly vulnerable to natural hazards, accounting for almost 80% of human lives lost globally. AOGS is deeply involved in addressing hazard-related issues through improving our understanding of the genesis of hazards through scientific, social, and technical approaches.

AOGS holds annual conventions providing a unique opportunity of exchanging scientific knowledge and discussion to address important geoscientific issues among academia, research institutions, and the public.

Recognizing the need for global collaboration, AOGS has developed good cooperation with other international geoscience societies and unions such as the European Geosciences Union (EGU), AGU, the International Union of Geodesy and Geophysics (IUGG), the Japan Geoscience Union (JpGU), and the Science Council of Asia (SCA).

II. 5th International Conference on Engineering Geophysics (ICEG)

United Arab Emirates University (UAEU) and the Al Ain City Municipality (AAM), in partnership with the Society of Exploration Geophysicists (SEG), are proud to announce the fifth edition of the **International Conference on Engineering Geophysics** (ICEG). This conference will take place 21–24 October 2019 in the Conference Auditorium of the Crescent Building on the grounds of UAEU.

The objectives of ICEG 2019 will concentrate on global innovation, creativity, advances, and new approaches in the field of engineering/environmental geophysics and related fields. In addition to the core engineering/environmental and geotechnical focuses of this coming event, special sessions in related applications of archaeology, energy, and forensic geophysics will be included. Furthermore, international experts at the very cutting edge of their disciplines will deliver keynote presentations on their latest research, experiences, future goals for engineering/environmental geophysics, and raising public awareness of the critical role of near-surface geophysics. To submit your abstract, visit https://iceg2019.abstractcentral.com. The submission program is now open. For more information, visit ICEG 2019.

III. AGU Chapman Conference: Quest for Sustainability of Heavily Stressed Aquifers at Regional to Global Scales

Many of the world's major aquifers are under severe stress as a result of deficits created by large imbalances between inflows and outflows. These deficits have led to widespread depletion and in some areas, degradation of groundwater resources, which is of particular concern in areas where

alternative water supplies are limited. As a result, the question of what the future holds for these heavily stressed aquifers is being asked with increasing urgency worldwide. This Chapman Conference will draw together the community of researchers interested in the general topic of the sustainability of heavily stressed aquifers. Our goal is to assemble a diverse group of participants from the hydrology, policy, economics, and social science communities to discuss the following:

- Insights gained from previous field and modeling investigations and policy initiatives
- Unresolved questions regarding key governing mechanisms and conceptual–model uncertainties
- Approaches for tailoring policies to mesh with existing cultural and regulatory frameworks
- Appropriate roles for economic incentives
- Prospects for a more sustainable future

An emphasis will be placed on large regional aquifers supporting irrigated agriculture, as agriculture is the major user of groundwater. The ultimate objective of the conference will be to define promising paths forward for these heavily stressed systems. To submit your abstract, visit https://connect.agu.org/aguchapmanconference/upcoming-chapmans/aquifers-sustainability/program/guidelines. The submission program is now open. For more information, visit AGU Chapman Conference - Aquifer Sustainability.

IV. Environmental and Engineering Geophysical Society (EEGS)

The latest issue of *FastTIMES*, a news magazine for the near-surface geophysical sciences, has been released: https://www.eegs.org/latest-issue. This is a postconference issue with updated abstracts and extended abstracts from the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) 2019. Check it out.

Other upcoming issues in 2019 are:

- Managed and natural aquifer recharge
- U.S. infrastructure: Geotechnical and NDT geophysics
- Geophysical mapping for completion of the geological mapping coverage of the United States
- EPA Superfund sites geophysics

If you are interested in contributing or advertising, contact the editor, Geoff Pettifer, at editorfasttimesnewsmagazine@gmail.com.

V. SEG NSTS 2019 Leadership Elections

Elections will open on 1 June and close on 1 July 2019. Only current SEG members of the Near-Surface Geophysics Technical Section (NSTS) will be eligible to vote. Check your membership status prior to 1 June voting. Candidate bios, position statements, CVs, and a photo will be available at www.seg.org/ns.

VI. British Geophysical Association New Advances in Geophysics 2019 Meeting: Geophysics in the Critical Zone

The British Geophysical Association and the Near Surface Geophysics Group of the Geological Society of London are pleased to announce that 2019's New Advances in Geophysics meeting will focus on Geophysics in the Critical Zone—the upper tens of meters of the ground that dominate our interactions with geology.

The drive toward sustainable economic development requires, more than ever, an understanding of the relationship between society and the geology on which it is built. The properties of the near-surface environment, and the processes acting in it, affect us daily—in the foundations of our cities and future energy generation, the aquifers that store our water, and the soils that grow our food and preserve our history.

The near surface represents a uniquely challenging environment for geophysical surveys, comprising diverse natural and man-made materials, extreme changes in local ground conditions, and a complex range of subsurface processes. Nonetheless, geophysicists have developed methods to address these challenges. This meeting highlights modern geophysical approaches to understanding the near-surface environment and showcases future directions for the discipline.

The deadline for abstract submissions is 30 August 2019. We solicit submissions from any use of geophysics to characterize and quantify properties and processes in the critical zone, both offshore and onshore, and invite participants from both academia and industry. For submission, visit nag2019 - Submit an abstract. For more information, visit https://nag2019.wordpress.com/.

Save the dates: 11–12 November 2019 at the Geological Society of London's Piccadilly—and watch for further announcements.

To contribute material to the NSG newsletter, send an email to Kisa Mwakanyamale.

Guidelines for submissions: 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 NSG 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 NSG members who follow @NS_AGU will receive Twitter announcements, so make sure that you sign up!