Near-Surface Geophysics

Newsletter: May 2019

Dear Colleagues:

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

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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,
1. Upcoming Meetings

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<td>AGU–SEG</td>
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<td>SEG</td>
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<td>ICEG</td>
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2. AGU Updates

- **AGU–SEG Airborne Geophysics Workshop**

The AGU–SEG Airborne Geophysics Workshop will be held in Davie, Fla., on 11–13 June 2019. The workshop will be held to share advancements and applications of airborne geophysics for groundwater, mineral, petroleum, geotechnical, and hazards investigations. Preconference short courses are also available 9–10 June 2019. For more information, visit AGU–SEG 2019. The abstract submission period has closed. Workshop registration and preworkshop short course registration are open.

3. Near-Surface Geophysics Updates

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

AGU launched the Section Incentive Program in 2015 to reward the sections that had at least 5% of their primary affiliated members make financial 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 that we need only 11 more NS 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 to any AGU fund.

- Urban and Environmental Geophysics Course Planning Workshop
  Application is now open to attend a workshop to develop an Urban and Environmental Geophysics course, 4–5 June 2019 in Tampa, Fla. Please find information and the application on the website at https://www.iris.edu/hq/workshops/2019/04/urban_environmental_geophysics_course_planning_workshop.

- NSG Student Spotlight
  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 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

- Three Ph.D. Positions in Bayesian Geophysical Inversion and Model Selection
  The Applied and Environmental Geophysics Group at the University of Lausanne has openings for three Ph.D. students working on the following:
  1. Geophysical inversion with complex geological priors using deep learning and multiple-point statistics
  2. Accounting for petrophysical and upscaling errors in probabilistic and deterministic geophysical inversions
  3. Geophysics-based falsification and corroboration with emphasis on frozen ground dynamics in an alpine catchment
  The Ph.D. positions are funded for 4 years, and the starting date is 1 September 2019, or a slightly earlier or later date to be decided upon. Successful candidates ideally should hold M.Sc. degrees in geophysics, physics, statistics, mathematics, or quantitative Earth sciences. He or she should have a keen interest and preferably some experience in Bayesian statistics, scientific computing, geophysical forward modeling, and inversion. Field experience and knowledge about hydrogeological, critical zone, or permafrost processes are beneficial for subproject C. We are a dynamic international research group working on a wide variety of topics in environmental and computational geophysics. More details about the project and its partners are provided here: https://wp.unil.ch/linde-hydrogeophysics/geofaces/.
To apply, please send a cover letter clarifying your overall motivation for entering a Ph.D. program together with your curriculum vitae and the names, telephone numbers, and email addresses of two referees to Prof. Niklas Linde, Institute of Earth Sciences, Géopolis 3779, University of Lausanne, 1015 Lausanne, Switzerland, or by email to niklas.linde@unil.ch. The application deadline is 15 May 2019.

- **Postdoc Opportunity at CEA in Cadarache, France**

Geophysical site characterizations of European seismic monitoring stations and contributions to the development of best practices for noninvasive site characterization methods.

In situ geophysical characterizations of regional- or national-scale networks of earthquake recording stations are essential for the effective use of ground motion (GM) records by the earthquake engineering community to mitigate seismic hazards.

The current most common methods used for seismic site characterization rely on array-based recordings of surface waves using both active- (e.g., multichannel analysis of surface waves, or MASW) and passive-source (ambient vibration methods) noninvasive approaches. These methods determine the site dispersion curves from surface-wave phase velocity versus frequency (or wavelength) relations before inverting the curves to model the site shear wave velocity (VS) versus depth profiles. VS profiles are then used to calculate the site’s time-averaged VS of the upper 30 meters (VS30) for use by engineers in developing ergodic GM regression models, and/or in combination with the site GM recordings, to directly estimate the site-specific seismic response.

In recent years, an important coordinated international effort was initiated by several countries (France, Switzerland, Italy, Japan, the United States, etc.) to improve the state of knowledge about geophysical site characterization methods with the aim toward robust and consistent characterizations (VS, VS30, etc.) of seismic stations. Much work still remains to be done with respect to the characterization of site conditions at network stations and the improvement of the methods selected and their implementation. For example, the InterPACIFIC project recently produced a journal publication of guidelines (*Foti et al.* (2017), Guidelines for the good practice of surface wave analysis: A product of the InterPACIFIC project, *Bulletin of Earthquake Engineering*, [https://doi.org/10.1007/s10518-017-0206-7](https://doi.org/10.1007/s10518-017-0206-7)). The current effort is coordinated by the Consortium of Organizations for Strong Motion Observation Systems (COSMOS) project to develop guidelines for the use of noninvasive geophysical methods when characterizing seismic site conditions. The COSMOS project involves key developers and experts worldwide.

The proposed postdoc position will consist of participation in the current effort of seismic station characterization, as well as the optimization of their implementation:
1. The postdoctoral candidate is expected to participate in geophysical surveys of seismic stations located in European and, occasionally, other sites (~15% of the total time).

2. The candidate is expected to improve acquisition parameters to optimize subsequent surveys (e.g., through analysis of noise level versus quality of results, optimal number of sensors, etc.). The candidate is expected to pay special attention to the issue of the proper representation of uncertainties in the results produced, as well as the effect of heterogeneities, those issues being important current topics in the scientific community. These tasks will be carried out on the basis of the process, the measurement surveys in which the candidate will be involved, and the reprocessing of previous surveys (~60% of the total time).

3. Finally, the candidate is expected to be involved within the COSMOS guidelines project and assist organizers within the project advancement and guidelines writing coordination (~25% of the total time). This task will be performed by close interactions with Alan Yong (U.S. Geological Survey research geophysicist and current chair of the COSMOS Guidelines Facilitation Committee).

**Location:** CEA Cadarache, Saint-Paul-lès-Durance, France  
**Contact:** Fabrice Hollender, fabrice.hollender@cea.fr, +33 4 42 25 45 36  
**Required skills:** Geophysics, signal processing, proficiency in Matlab (or Python), Geopsy  
**Duration:** One year, extendable 1 year more

5. **FYI**

I. **International Workshop on Gravity, Electrical & Magnetic Methods and Their Applications**

The International Workshop on Gravity, Electrical & Magnetic Methods and Their Applications (GEM 2019) will take place in Xi’an, China, from 19 to 22 May 2019. GEM 2019 is targeted to be an international forum for geophysicists to communicate the latest developments and exchange ideas in potential fields and electromagnetics. Specifically, the goal of GEM 2019 Xi’an is to bring together geophysics researchers and practitioners from academia, government agencies, resource companies, and contractors to share the latest technological and methodological advancements and their successful applications to practical problem solving, and to inspire discussions among the participants about the best practices of turning electromagnetic, gravity, and magnetics data into value-added information. For more information, visit [GEM 2019 Xi’an](#).

II. **5th International Conference on Engineering Geophysics (ICEG)**
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 fifth edition of the **International Conference on Engineering Geophysics** (ICEG). This edition 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 on the critical role of near-surface geophysics. For more information, visit [ICEG 2019](#).

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

The Asia Oceania Geosciences Society (AOGS) was established to promote geoscience 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 of 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).

### IV. 2019 IUGG Womxn’s Networking Event

Join us at the 27th IUGG General Assembly in Montréal, Que., for the first-ever IUGG Womxn’s Networking Event!

Friday, 12 July, 7:00–9:00 p.m. @ Les 3 Brasseurs, 105 St-Paul Est, Montréal. RSVP here: [https://forms.gle/EJB38Ws2F92LorWZ8](https://forms.gle/EJB38Ws2F92LorWZ8).

The goal of this event is to foster relationships and solidarity among womxn members of IUGG (womxn is a term that includes cis and trans women).
Many of the womxn who attend the IUGG conference are the only womxn in their research group, so conferences and workshops are critical opportunities for them to connect with other womxn in their field. This networking event aims to strengthen the community of womxn scientists in IUGG and provide a welcoming place for them to network with each other at the conference. Appetizers and ample time for meeting each other will be provided. The event will also include an acknowledgment of our sponsors and a discussion of next steps to support and build community among womxn geophysicists.

The Earth Science Women’s Network is cosponsoring this event. Other cosponsors include ExxonMobil, the Cooperative Institute for Research in Environmental Sciences (CIRES), GFZ Potsdam, Green Geophysics, and Lamont-Doherty Earth Observatory.

V. Free Lecture by Dr. Rosemary Knight
The link has the registration link, bio, and presentation abstract. 
https://www.linkedin.com/pulse/advancing-use-geophysical-methods-sustainable-free-laurie-whitesell/

VI. SEG Near Surface Technical Section (NSTS) 2019 Leadership Elections
Elections will open on 1 June and close on 1 July 2019. Only current SEG members of the 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.

VII. 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. Abstract submissions will open in mid-May; 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.

**Save the dates: 11–12 November 2019 at the Geological Society on London’s Piccadilly, and look out for further announcements.**

Best regards from the Organizing Committee:

1. Dr. Adam Booth (University of Leeds)
2. Dr. Lucy Catt (Reynolds International)
3. Dr. Jean-Christophe Comte (University of Aberdeen)
4. Jess Holmes (Queen’s University Belfast/British Geological Survey)
5. Dr. Simon Hughes (TerraDat)

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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!