

December2010 Newsletter of the AGU Near-Surface Focus Group

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Recent announcements of interest to the NS community (conferences, academic positions, graduate student opportunities etc.) can be found at the AGU NS-Focus Group Web Page: <http://nsg.agu.org>

AGU NS Membership as of December 2010:
Primary affiliation: 740 members; Secondary: 2591 members

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1. 2010 Fall AGU Meeting 13-17 December, San Francisco

For complete information see (<http://www.agu.org/meetings/fm10/>)

1.1. Reminder of events:

1.1.1. Near Surface Geophysics Focus Group Luncheon, 12:30 on Tuesday December 14, InterContinental San Francisco

The NS luncheon at the Fall AGU meeting will be held from 12:30-13:30 on Tuesday December 14 at the Intercontinental Hotel (Ballroom A). This event is the opportunity to learn about NS activities, engage with the NS leadership and provide feedback on how the focus group can further support the needs of the NS community. The NS Chair, Louise Pellerin, will summarize the membership and focus group activities over the last year, along with plans for the next year. Other focus group officers will report on specific issues relating to their appointment duties.

IMPORTANT NOTE:

Student members of NS: We still have student tickets available to cover the NSFG luncheon at AGU. We are also planning two informal lunch meetings for

NSFG and other interested students and have received a very positive response from student members on this idea. Please contact Seth Campbell (seth.campbell@umit.maine.edu) to request a luncheon ticket or for more information about the student lunches. In the email, please include whether NSFG is your primary affiliation.

1.1.2. Joint Near Surface Geophysics Focus Group/Hydrogeophysics Social Event, 7:00 pm on Tuesday December 14.

Continuing a well-established tradition, NS and the Hydrogeophysics Committee of the Hydrology Section will hold a joint NS/Hydrogeophysics social event at The Hotel Utah (500 4th Street at Bryant - 4 blocks south along 4th Street from the conference center, <http://www.thehotelutahsaloon.com/contact.html#map>). This social event will begin at 7:00 pm on Tuesday December 14. This is a great opportunity to mingle with fellow near surface and hydrogeophysics colleagues in an informal setting.

1.1.3. NS Student Evening Social Event

Come join your fellow NS students for a casual evening out in San Francisco. A location is still in the works, but all the bar/restaurants being considered are just a short walk from Moscone and will serve food in addition to drinks. This is a great opportunity to meet other students and to get a sense of the incredibly eclectic membership within the NS Focus Group. Further details will be posted soon on the NS Student Wiki. Stay tuned!

1.1.4. Electromagnetic Community Town Hall at AGU

When: Thursday, Dec 16th, 6-8 pm

Where: Palomar Hotel ZEUM room, one block north of Moscone Convention Center on 4th Street.

Why: Come together with EM researchers and practitioners who are interested in the future of EM and users of EM methodologies who want access to instruments, software and expertise. Learn what's going on in open access data, major initiatives, new instrument centers, and meet colleagues in industry, academia, government labs and funding agencies. Enjoy free food, beverages and a hosted bar!

1.2. Reminder of final sessions and schedules AGU

1.2.1. Near-Surface Geophysics sessions

Monday, December 13:

NS11A. Inversion I: Back to Basics Posters (Conveners: R.B. Herman T. Lecocq)
8:00 AM-12:20 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Non-Linear Geophysics/Mineral Rock Physics/Seismology

NS13A. Inversion II: Uncertainty and Managing the Unknown Posters (Conveners B. Jafarpour, G.-H. Crystal Ng)

1:40 PM-6:00 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Geomagnetism and Paleomagnetism/Non-Linear Geophysics/Seismology/Hydrology

Tuesday, December 14:

NS22A. Near-Surface Geophysics General Contributions I*

(Conveners: C.J. Weiss, L.H. Cox)

10:20 AM-12:20 PM

MW-3020 (Moscone West)

Co-Sponsor(s): Non-Linear Geophysics/Seismology/Geomagnetism and Paleomagnetism/Hydrology

NS23A. Near-Surface Geophysics General Contributions II Posters*

(Conveners: X. Zhou, G.A. Wilson)

1:40 PM-6:00 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Non-Linear Geophysics/Seismology/Geomagnetism and Paleomagnetism/Hydrology

Wednesday, December 15:

NS31A. Airborne Geophysics for Geohazards and Environmental Problems I

Posters (Conveners: Shigeo Okuma M. Deszcz-Pan)

8:00 AM-12:20 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Natural Hazards/Volcanology, Geochemistry, and Petrology/Seismology/Hydrology/Geomagnetism and Paleomagnetism/Geodesy

NS31B. Biogeophysics: Toward Modeling of Geophysical Signatures of Microbial Processes in the Earth I Posters

(Conveners: E.A. Atekwana, L.D. Slater)

8:00 AM-12:20 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Biogeosciences/Cryosphere/Geomagnetism and Paleomagnetism Global Environmental Change/Hydrology/Mineral and Rock Physics Seismology

NS33A. Biogeophysics: Toward Modeling of Geophysical Signatures of Microbial Processes in the Earth II

(Conveners: E.A. Atekwana, L.D. Slater)

1:40 PM-3:40 PM

MW-3022 (Moscone West)

Co-Sponsor(s): Biogeosciences/Cryosphere/Geomagnetism and Paleomagnetism Global Environmental Change/Hydrology/Mineral and Rock Physics Seismology

NS34A. Airborne Geophysics for Geohazards and Environmental Problems II

(Conveners: S. Okuma, M. Deszcz-Pan)

4:00 PM-6:00 PM

MW-3022 (Moscone West)

Co-Sponsor(s): Natural Hazards/Volcanology, Geochemistry, and Petrology/Seismology/Hydrology/Geomagnetism and Paleomagnetism/Geodesy

Thursday, December 16:

NS41A. Beyond the Case History: Novel Seismic Methods and Applications I* Posters

(Conveners: A. Lamb S.S. Haines)

8:00 AM-12:20 PM

MS-Poster Hall (Moscone South)

Co-Sponsor(s): Seismology

NS41B. Joint Interpretation of Different Geophysical Data for Natural Resources Characterization I Posters
(Conveners: M. Commer, T. Seher)
8:00 AM-12:20 PM
MS-Poster Hall (Moscone South)
Co-Sponsor(s): Seismology

NS43A. Joint Interpretation of Different Geophysical Data for Natural Resources Characterization II
(Conveners: M. Commer, T. Seher)
1:40 PM-3:40 PM
MW-3022 (Moscone West)
Co-Sponsor(s): Seismology

NS44A. Beyond the Case History: Novel Seismic Methods and Applications II*
Sponsor: Near Surface Geophysics/ Seismology
(Conveners: T.E. Blum, J.M. Lorenzo)
4:00 PM-6:00 PM
MW-3022 (Moscone West)
Co-Sponsor(s): Seismology

1.2. 2. Hydrogeophysics sessions (from Niklas Linde)

Monday, December 13 and Tuesday, December 14:
Hydrogeophysics: Advances in Measurement, Monitoring, and Modeling of Hydrological Processes (24 orals; 24 posters)*
Oral 1: MW-3014 (Moscone West), Mon, Dec 13 - 8:00-10:00
Oral 2: MW-3014 (Moscone West), Mon, Dec 13 - 10:20-12:20
Oral 3: MW-3014 (Moscone West), Mon, Dec 13 - 13:40-15:40
Poster: MS-Poster Hall (Moscone South), Tue, Dec 14 - 13:40-15:40**

Hydrogeophysical Data Fusion and Integrated Site Investigation Methods (16 orals; 26 poster)*
Poster: MS-Poster Hall (Moscone South), Mon, Dec 13 - 8:00-10:00
Oral 1: MW-3022 (Moscone West), Tue, Dec 14 - 13:40-15:40
Oral 2: MW-3022 (Moscone West), Tue, Dec 14 - 16:00-18:00

High-Resolution Hydrogeophysical Characterization of Soils and Aquifers From Microscale to Field Scale (7 orals; 27 posters)*
Poster: MS-Poster Hall (Moscone South), Mon, Dec 13 - 13:40-15:40
Oral 1: MW-3016 (Moscone West), Tue, Dec 14 - 8:00-10:00

2. Overview SEG 2010, Denver, Colorado, 17-22 October (from Jan van der Kruk)

The SEG conference in Denver offered a broad spectrum of well-attended near surface geophysics sessions: three oral sessions: "Methodological developments and case studies" 1 & 2, "Surface waves", two poster sessions "Methodological developments and case studies" 1 & 2, and three special sessions "Geohazards and public safety", "Hydrogeophysics", and "Humanitarian and environmental applications of geophysics at the community scale". In the last session, which was in many ways unique and arguably the first of its kind at a major meeting, several project teams of SEG's Geoscientists Without Borders initiative (www.seg.org/gwb<http://www.seg.org/gwb>) presented their results. SEG's bookshop displayed an advanced copy of the book "Advances in Near Surface Seismology and Ground-Penetrating Radar" edited by Rick Miller,

John Bradford, and Klaus Holliger. The book contains 29 peer-reviewed chapters written by leading scientists in the field and is expected to be available towards the end of the year. The annual business meeting of the Near Surface Geophysics Section (NSGS) was held on Monday, October 18 and was attended by several members. Here, Rob Jacob completed his term as past-resident, and we welcomed the new executive committee, lead by president Klaus Holliger with president-elect James Irving and Jan van der Kruk as past-president.

The 2010 annual NSGS reception was held at the Wynkoop Brewing Company on Tuesday, October 19, and more than 130 members attended the reception. During the reception, the Harold Mooney Award was presented to John Bradford in recognition of long-term, tireless, and enthusiastic support of the near surface geophysics community. Four NSGS Student Travel Grants were presented to Brian Miller (University of Kansas), Yang Zhao (University of California, Berkeley), Gigih Helma Wijaya (Gadjah Mada University, Indonesia), and Marco Vanic (Belgrade University, Serbia). An honorary membership was presented to Peter Annan in recognition of his enthusiastic support of the near surface geophysics community. Hearty congratulations to all of these award-winners and we look forward to another successful meeting in September 2011 in San Antonio, Texas.

Carol Finn, president-elect of AGU, signed a Memo of Understanding with the Society of Exploration Geophysicists (SEG) on 18 Oct 10 at the SEG annual meeting in Denver. An AGU-SEG committee has been formed to explore and promote collaborative efforts between the two organizations. Louise Pellerin and John Bradford, the committee co-chairing, are populating the committee and plan on meeting in San Francisco during the AGU Fall meeting. Collaboration between AGU and SEG is long overdue and we are excited about the prospects - stay tuned!

3. Call for abstracts: SAGEEP 2011, April 10-14th Charleston, South Carolina, extended abstracts January 14th (from John Bradford)

The conference website: <http://www.eegs.org/sageep/index.html>
Abstract submission website: <http://www.xcdsystem.com/sageep2011/>

Important Dates:

Jan.14, 2011: Deadline for extended abstracts (these are now optional)
April 10-14: SAGEEP - Charleston

Dear Colleagues,

For the first time, SEG will be co-sponsoring sessions at the upcoming Symposium on the Application of Geophysics to Environmental and Engineering Problems (SAGEEP) April 10 - 14 in Charleston, NC. I invite you to submit an abstract to one of the three SEG sponsored sessions listed below. Deadline for extended abstracts is January 14. More information about SAGEEP and submission details can be found at <http://www.eegs.org/sageep/index.html>.

S02: Migration imaging of near-surface seismic and GPR data: New developments and case studies

Wavefield migration for imaging near-surface reflection data has been common practice for the past 2-3 decades. With an accurate velocity model and an appropriate migration algorithm, migration allows us to make the most of our

data: we can get the most accurate image of reflector positions and the process of producing a velocity model reveals additional useful information about the subsurface. Most of the advances have come from oil and gas exploration using seismic methods, yet near-surface practitioners have historically been slow to adopt new algorithms and methodologies: decreasing computing costs are making it possible to reduce this time gap. Additionally, methods developed for exploration seismology may not be appropriate for near surface applications where the strength of the velocity gradients, scale of heterogeneity, and prevalence of wide angle reflections are the rule rather than the exception. Further, the vector nature of electromagnetic waves means that migration based on the scalar wave equation can lead to errors and new algorithms based on Maxwell's equations are needed for accurate imaging. In this session, we invite papers that explore migration for near-surface imaging problems to include theoretical developments, computational advances, and case studies. Conveners: Rick Miller and John Bradford

S03: Interpretation using Multiple Methods -- An Analogy to Mathematical Boundary-Value Problems

Multiple methods are more common to near-surface geophysics compared with deeper petroleum exploration for which reflection seismology is predominant. While gravity and, more recently, controlled source EM have become more commonplace in petroleum exploration, approximately 95 % of an exploration budget involves reflection seismology. Although one method does not similarly dominate in near-surface geophysical exploration, given the diversity of problems being addressed, it is still common for only one method to be used due to the dictates of the customer and the budget. This is in spite of potential improvement in the interpretation when secondary and tertiary methods corroborate findings and expand on the discovered information base, as well as the enhanced ability to bridge the gap between geophysical response and geologic or geotechnical implications (e.g. clay versus water saturation effects; corrosion potential, etc.). This is analogous to a boundary-value problem in mathematics when a differential equation is solved using integral transforms. The specificity of the overall solution is a function of how many constraints are known on the system being solved such as initial time conditions and conditions that represent spatial constraints. Similarly, when a client recommends a single method for a site because it is time-honored cure for similar sites, that person may be missing out on combinations of techniques that have the possibility of substantially improving the overall interpretation. One example would be to suggest a combination of tomographically-inverted critically refracted seismic returns and a similar inversion of multi-electrode resistivity to offer the potential of a deliverable of distance versus depth showing mechanical and electrical properties for a common profile. Further, the combination of multiple viewpoints can offer a means to predict subsurface geotechnical parameters that can defy definition based upon a single measurement. This proposed session would seek out success stories demonstrating these often missed opportunities. Conveners: Steve Danbom and Tom Dobecki

S06: New developments in frequency-dependent seismic and EM analyses for near surface geophysics

Many of the properties that we seek to measure with geophysical methods vary with the measurement frequency. This is true for both seismic and electromagnetic methods. In the past, this frequency dependence has often been ignored as it may sometimes be considered a higher order effect and therefore negligible. However, the frequency dependent component of the

signals carries useful information about the system we are trying to measure. For example, permeability and porosity can be related to the frequency dependent seismic response or the spectral IP response; information about bound water or total water content can be obtained from frequency dependent attenuation of the EM signal in the GPR frequency band. In this session, we welcome papers that explore frequency dependent processes in near surface geophysics to include theoretical developments, processing methods, petrophysical models, and laboratory or field studies. Conveners: Ranajit Ghose and John Bradford

4. European Geosciences Union (EGU) General Assembly 2011, April 3-8th
Vienna, Austria (from Niklas Linde)

The EGU General Assembly 2011 will bring together geoscientists from all over the world into one meeting covering all disciplines of the Earth, Planetary and Space Sciences. Especially for young scientists the EGU appeals to provide a forum to present their work and discuss their ideas with experts in all fields of geosciences. The EGU is looking forward to cordially welcome you in Vienna!

Abstract Submission (10 January 2011):
<http://meetings.copernicus.org/egu2011/>

Sessions of interest include:

HS8.1.2

Hydrogeophysics in subsurface hydrology

Convener: Harry Vereecken | Co-Conveners: Ugur Yaramanci, Ty Ferre

SM3.6/SSP2.4/SSS5.8/TS4.5

Imaging the shallow subsurface with seismic and GPR methods (co-organized)

Convener: Lars Nielsen | Co-Conveners: Klaus Holliger, Hansruedi Maurer, Matthew Yedlin

SM3.1

Seismic Imaging of the Earth's Interior: Theoretical and Methodological Achievements in Seismic imaging

Convener: Edi Kissling | Co-Conveners: Jean-Xavier Dessa, Ivan Koulakov, Stefan Buske

SM3.4/TS1.7

Noise Interferometry: What can we learn from noise? (co-organized)

Convener: Antonio Villaseñor | Co-Conveners: Florent Brenguier, Laurent Stehly, Martin Schimmel

SM3.5/GD2.13/TS8.5

Active seismic investigations of the Earth's crust (co-organized)

Convener: Alireza Malehmir | Co-Convener: Stefan Buske

SM3.7

Multi-dimensional electromagnetic modelling and inversion

Convener: Marion Miensopust | Co-Conveners: Pilar Queralt, Colin Farquharson

ERE2.3/SM3.10

Geophysical methods applied to geological storage of CO₂ (co-organized)

Convener: Christopher Juhlin | Co-Conveners: Stefan Buske, Roman Pevzner

4.1. Call for abstracts: Special Session-Integrated rock physics, geological and geophysical studies for the characterization, protection and valorization of archaeological and historical site (from Yoann Quesnel)

Dear NS-group Members,

A session related to archaeological prospection is organized for the next EGU General Assembly in Vienna, Austria (03-08 April 2011).

EMRP7

"Integrated rock physics, geological and geophysical studies for the characterization, protection and valorization of archaeological and historical sites"

Convener: Y. Quesnel (CEREGE, Aix-en-Provence, France)

Co-Convener: S. Piro (NRC, Roma, Italy), E. Di Luzio (NRC, Roma, Italy)

This 2011 session still deals with geophysical prospection on any archaeological sites, but with extension to how these approaches (with constraints like geology and rock physics) can help to characterize eventual hazards on those sites. The objective is to share different experiences as well as to highlight some needed improvements in some fields (e.g. new instruments?, new processing techniques?, etc.), as for the last year's session.

You are invited to read the details about this session and to submit an abstract via the EGU General Assembly 2011 website on this link: <http://meetingorganizer.copernicus.org/EGU2011/session/6458> (and click on 'Abstract submission'...)

Deadline for abstract submission: 11 January 2010

5. Call for papers: Special Issue on Induced Polarization for Hydrogeological and Environmental Investigations in EAGE journal of Near Surface Geophysics

Abstract deadline: 15 December 2010

Full-paper deadline: 15 April 2011

In the induced polarization (IP) geophysical method, the electrical polarisability of subsurface soils and rocks is measured for exploration purposes. While originally developed for the prospection and characterization of mineral deposits, which represent well polarisable targets, in recent years the value of the IP method also has been recognized for near-surface studies in relatively low-polarisable, sedimentary environments. The latter development has become possible due to considerable improvements over the last decade in instrumentation, macroscopic modelling and inversion techniques and the understanding of the microscopic origin of IP. Promising applications of the IP method are particularly seen in the rapidly emerging fields of hydrogeophysics and biogeophysics, including, for instance, the characterization of hydraulic properties or the monitoring of biogeochemical processes in the subsurface.

This special issue has been motivated by the recent 'International Workshop on Induced Polarization in Near-Surface Geophysics', held in Bonn, Germany,

on 30 September/1 October 2009 (<http://ipworkshop.geo.uni-bonn.de/>), which reflected the increasing interest of the scientific communities dealing with structures and processes in the shallow subsurface in using the IP method for improved characterization.

The aim of the special issue is to present the recent developments and applications of the method for near-surface hydrogeological and environmental investigations. Any contribution on the subject is welcome, addressing data acquisition, petrophysical relationships, modelling, inversion, laboratory or field studies.

Please inform the EAGE Editorial Office, Ms. Wendel van der Sluis (ws@eage.org), about your intention to contribute and provide a one-page draft abstract by 15 December 2010. Successful authors will be required to submit their full papers by 15 April 2011.

Guest Editors:

Andreas Kemna, University of Bonn, Germany, kemna@geo.uni-bonn.de

Andreas Hördt, Technical University of Braunschweig, Germany, a.hoerdt@tu-braunschweig.de

Norbert Klitzsch, RWTH Aachen University, Germany, nklitzsch@eonerc.rwth-aachen.de

6. Call for papers: IWAGPR2011

The International Workshop on Advanced Ground Penetrating Radar is a biannual series of international scientific symposia devoted to the advancements in GPR techniques and applications. The conference is aimed at presenting a wide range of scientific and technical information of high standard to scientists, engineers and end-users of GPR technology. The goal of the workshop is to spread knowledge about GPR technology and its use, as well as, to provide a unique possibility to participants to exchange ideas about the advances in their work and discuss their results. All papers presented at the conference will be published in the workshop proceedings. The official language of the conference is English.

Paper Submission:

Authors are invited to directly submit full camera-ready papers of between 4-6 pages.

The Technical Review Panel will review submissions and corresponding authors will be notified on the acceptance or rejection of the paper.

Deadline for papers: January 28th, 2011

Notification of Acceptance: March 18th, 2011

For questions please contact: Jan van der Kruk (j.van.der.kruk@fz-juelich.de)

More information can be found at: www.fz-juelich.de/iwagpr2011

7. Open positions:

7.1. Ph.D. position in Computational Geophysics, ETH Zurich

The Applied and Environmental Geophysics Group of ETH Zurich has an immediate opening for a Ph.D. position in computational geophysics. The primary objectives of the project are to develop novel tomographic algorithms for seismic and ground-penetrating radar data. Developments should be geared towards improved efficiency and reliability by considering new rapid forward solvers and optimized model parameterizations. The successful candidate should hold a Masters degree in geophysics, physics, mathematics or electrical engineering, and should have a keen interest and preferably some experience in numerical forward modeling and inversion. We are a dynamic international research group working on a wide variety of high profile topics in applied and computational geophysics. The working languages in our group are English and German. Interested candidates should send their Curriculum Vitae and the names and addresses of three referees by January 15, 2011 to:

Prof. Dr. Hansruedi Maurer
Institute of Geophysics
ETH-Zürich
Sonneggstrasse 5
CH-8092 Zurich, Switzerland
maurer@aug.ig.erdw.ethz.ch<<mailto:maurer@aug.ig.erdw.ethz.ch>>

More information on the ETH Applied and Environmental Geophysics Group can be obtained at <http://www.aug.geophys.ethz.ch>

7.2. PhD position at research center Juelich

The Transregional Collaborative Research Center TR32 and the Agrosphere Institute at the Forschungs Zentrum Jülich, Germany, invite applications for 1 PhD Graduate Research Assistantship. In the focus of the TR32, Patterns in Soil-Vegetation-Atmosphere Systems: Monitoring, Modeling, and Data, the following project is open:
Soil moisture content estimation by inverting surface and borehole ground penetrating radar data. We are looking for highly motivated individuals with a strong background in geophysics, physics or electrical engineering and a keen interest in applying and improving numerical and computational methods. We expect strong interest in the fields of hydrogeophysics and inversion methods. Experience in FORTRAN and matlab programming is highly desirable. We offer a competitive position, excellent benefits, a productive, interdisciplinary working atmosphere including comprehensive supervision. The PhD student will be part of the newly established Graduate School of the TR32. Interested candidates should send a complete application package (CV; cover letter describing background, training and research interests; certificates; contact information of two references) as a single PDF to Jan van der Kruk (j.van.der.kruk@fz-juelich.de<<mailto:j.van.der.kruk@fz-juelich.de>>). The position is expected to commence January, 2011. Review of applications will begin immediately and continue until the position has been filled.

For more information please contact
Prof. Dr. Jan van der Kruk (j.van.der.kruk@fz-juelich.de<<mailto:j.van.der.kruk@fz-juelich.de>>)
Agrosphere (IBG-3)
Forschungszentrum Jülich, D-52425 Jülich, Germany
<http://www.fz-juelich.de/icg/icg-iv>
www.tr32.de<<http://www.tr32.de>>

To contribute material to the NS-letter send an e-mail to:

Xavier Comas xcomas@fau.edu<<mailto:xcomas@fau.edu>>

DEADLINE: Material must be received 2 full business days prior to the first of each month.

GUIDELINES FOR SUBMISSIONS: All members are welcome to submit content of interest to the NS community. Please keep messages brief and provide contact information and (if available) a web address for additional information. AGU requests formatting of e-mail messages to be as simple as possible (no bold characters (use ALL CAPS instead), no color font, or other special formatting of text and paragraphs). E-mail attachments cannot be distributed.

Please do not reply to this email