

## January 2008 Newsletter of the AGU Near-Surface Focus Group

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### 1. Near-Surface Geophysics Focus Group announcements

#### 1.1 Focus Group activity:

Membership: December 2007, 454 primary affiliates and 1321 secondary. December 2006, 235 primary and 646 secondary.

Fall Meeting: 2007, 15 oral & poster sessions, 160 abstracts. 2006, 90 abstracts.

Thanks to all who helped in the evaluation of student presentations at the Fall Meeting (Sarah Kruse).

#### 1.2 Near-Surface Focus Group Website

Thanks to the efforts of Rhett Herman, we now have a website:

[http://www.agu.org/focus\\_group/nsg/](http://www.agu.org/focus_group/nsg/)

A recently added feature: a listing of positions available. We are receiving a growing number of requests to include these in our newsletter. We plan to run each ad once, then keep them on the website until ~ a month past the deadline date. Check out the website now for faculty positions, post docs, student positions.

#### 1.3 Positions in the Near-Surface Focus Group (from Rosemary Knight)

## EXECUTIVE COMMITTEE

The leadership of the NS Focus Group involves a 3-person Executive (Chair, Vice-Chair, Secretary) and a 12-person Executive Committee. At our meeting in December 07, the NS Executive Committee voted to adopt the following procedure: Each person on the Exec Comm serves for 3 years, with 4 new members added each July. So this is your chance to get involved with NS as we add 4 new members in July. The role of the Exec Comm is still being defined as we develop as a focus group and participate more in the activities of AGU. At present on the Exec Comm: George Tsoflias handles the monthly newsletter, Rhett Herman handles the website, two others will be the Program Reps for the spring and fall meetings, one will be our Eos Publications rep. So please email me - Rosemary Knight [rknight@stanford.edu](mailto:rknight@stanford.edu) if you have an interest in participating in any way on the NS Focus Group Executive Committee. Deadline: Feb 15, 2008.

## THE EXECUTIVE

Every two years, in July, the executive (Chair, Vice-Chair, Secretary) of our focus group is due to change. Below I briefly describe the process and invite your participation. Please do take this opportunity to get involved - this is YOUR focus group -

**Position of Chair:** A new NS Chair is invited to serve for two years by the incoming AGU President, but is recommended to the AGU President by the current NS Chair. At our meeting in December 07, the NS Executive Committee voted to adopt the following procedure: The outgoing NS Chair recommends that the vice-chair assume the position of Chair. This provides the continuity that is very important for a group like ours. This will be done after a general email inviting the NS membership to volunteer, or to nominate another, to serve in the position of Chair. Lee Slater, our current vice-chair has agreed to take on the position of Chair. I do however invite any of you to contact me, to volunteer, or to nominate others. The deadline for volunteers/nominations is February 15, 2008.

**Positions of Vice-Chair and Secretary:** People are appointed to these positions by the incoming Chair. At our meeting in December 07, the NS Executive Committee adopted the following procedure: There will be an email to the membership inviting the NS membership to volunteer, or to nominate another, to serve in these positions. When there are multiple volunteers/nominations for a position, the decision is made through a vote of the Executive Committee. We are now looking for replacements for Lee Slater as Vice-Chair, and Sarah Kruse as Secretary, to serve 2-year terms starting July 2008. Please volunteer or encourage others to. The deadline for volunteers/nominations is February 15, 2008.

## EOS ADVISORY BOARD MEMBER

We have been asked to recommend names of people who would be willing to serve on the EOS Advisory Board. NS representation on this board would contribute greatly to increasing interest in, and awareness of, near-surface geophysics. If you are interested in representing NS Geophysics in this capacity, please respond to Rosemary Knight <[rknight@stanford.edu](mailto:rknight@stanford.edu)>  
Responsibilities include:

1. Assist Editors to identify topics for invited Feature articles and potential authors for such articles.
2. Assist the Editors in evaluating proposals from the community for Feature articles.

3. Serve as cross-disciplinary reviewers.
  4. Provide advice to Editors about who could serve as science reviewers on articles and other types of contributions.
  5. Provide news leads that can be followed up by staff reporters.
  6. Be alert to members who should be recognized in the AGeophysicists@ column and submit information or invite it to be submitted.
  7. May prepare short news items or brief reports for consideration by one of the Editors.
  8. Provide feedback to the Eos Editors that will help them to improve the editorial calendar, plans, and guidelines.
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## 2. Approved NS sessions for the 2008 Joint Assembly

Near Surface Geophysics (NS) will host seven sessions at the 2008 AGU Joint Assembly in Fort Lauderdale (FL), May 27-30. The abstract submission tool opens on January 8th and can be accessed at <http://www.agu.org/meetings/ja08/>.

### NS01 Innovative Near-Surface Geophysical Approaches to the Characterization of Karst Aquifers

A number of surface and subsurface geophysical methods are being used in innovative ways for the field-scale characterization of near-surface karst features. Interesting studies have been conducted at the centimeter to meter scale of karst limestone specimens and boreholes, which include magnetic resonance imaging, computer-aided tomography, and digital optical borehole visualizations. This session will focus on (1) advances in instrumentation and methods and (2) applications to a variety of groundwater investigations. This session will bring together geophysicists, hydrologists, and geologists who are investigating karst carbonate aquifers to determine the geologic features affecting the groundwater flow at the scale of centimeters to kilometers. It is hoped that a broad spectrum of geophysical experts presenting at this session will produce an overview of the state of practice of high resolution surface, borehole, and laboratory geophysical methods and their application to a variety of groundwater investigations. Conveners: Kevin J. Cunningham, U.S. Geological Survey, 3110 SW 9th Avenue, Fort Lauderdale, FL 33315 USA, email: [kcunning@usgs.gov](mailto:kcunning@usgs.gov), and Cameron Walker, Walker Marine Geophysical Company, 7061 NE 8th Drive, Boca Raton, FL 33487 USA, email: [walkermarine@yahoo.com](mailto:walkermarine@yahoo.com)

### NS02 Near Surface Studies of Coastal Processes

Coastal areas serve as sites of dense human settlement as well as recreational areas. Natural and anthropogenic processes can significantly impact coastal systems over short time scales. A part of coastal research is dedicated to understanding this process-response behavior, for example morphological changes due to hurricane impacts, sediment transport, saltwater encroachment, coastal aquifer characterization and submarine groundwater discharge. This session invites contributions from near surface geophysics, aqueous geochemistry and hydrology illustrating applications and limitations of the methods used in addressing issues related to coastal research. Conveners: Swagata Guha, University of South Florida, 4202 E Fowler Avenue, Department of Geology SCA522, Tampa, FL 33620 USA, email: [sguha9@gmail.com](mailto:sguha9@gmail.com), Christopher Smith, Louisiana State University, Department of Oceanography and Coastal Sciences Coastal Ecology

Institute 1223 Energy, Coast, and Environment Building , Baton Rouge, FL 70803 USA, email: [csmi125@lsu.edu](mailto:csmi125@lsu.edu), and Mou Roy, University of Florida, Department of Geological Sciences 241 Williamson Hall P.O. Box 112120 , Gainesville, FL 32611 USA, email: [moutusi@ufl.edu](mailto:moutusi@ufl.edu)

**NS03 New Geophysical Tools and Software for High-Resolution Field Site Characterization**  
Rapid progress in geophysical measurement technology related to positioning, wireless communication, fiber-optics, handheld computing and visualization has greatly improved efficiency and precision of field data acquisition. This session will serve as a forum for geophysicists, hydrologists and resource managers to exchange practical experiences and explore ways to advance characterization of field sites for hydrologic, environmental, and engineering applications. The creation of shared instrument- and expertise pools, as done for example by the CUAHSI Hydrologic Measurement Facility for Geophysics, makes these new tools available to the wider community. The case histories in this session will illustrate the possibilities, limitations and learning from applications of new geophysical tools and software.

Conveners: Mark Grasmueck, RSMAS, University of Miami, USA, email: [mgrasmueck@rsmas.miami.edu](mailto:mgrasmueck@rsmas.miami.edu), Sarah Kruse, University of South Florida, USA, email: [skruse@cas.usf.edu](mailto:skruse@cas.usf.edu), and Remke van Dam, Michigan State University, USA, email: [rvd@msu.edu](mailto:rvd@msu.edu)

**NS04 Rock Physics Relationships for the Near-Surface: From the Laboratory Scale to the Field Scale**

One of the main challenges in the use of geophysical methods for studying the near-surface of Earth is relating the measured geophysical properties to the material properties of interest. The relationship between these two types of properties, the rock physics relationship, can be studied at the scale of core samples through the use of laboratory experiments, and theoretical and numerical modeling. In the interpretation of geophysical field data, the key question is how to derive the field-scale relationships. We welcome submissions to this session that contribute to our understanding of rock physics relationships at all scales. This session will include discussions of laboratory and field experiments, and numerical and theoretical modeling.

Conveners: Rosemary Knight, Stanford University, USA, email: [rknight@stanford.edu](mailto:rknight@stanford.edu), and Anthony Endres, University of Waterloo, CAN, email: [alendres@sciborg.uwaterloo.ca](mailto:alendres@sciborg.uwaterloo.ca)

**NS05 Near-Surface Geophysical Methods in Wetland Studies**

Wetlands are considered among the most productive ecosystems, often compared to rain forests and coral reefs. Wetlands perform many ecological functions and serve as unique wildlife habitats, natural filters for water purification, surface water reservoirs, and recreational environments. Geophysical exploration of wetlands has expanded in recent years and contributed to improved understanding of wetland processes. Abstracts that focus on laboratory or field-scale studies of, 1) subsurface characterization of natural or contaminated wetland systems, 2) geophysical and/or hydrological properties of wetland sediments, and 3) biogeochemical processes in wetland soils, are solicited here. Studies that focus on the monitoring of wetlands processes are of particular interest.

Conveners: Xavier Comas, Florida Atlantic University, Boca Raton, FL USA, email: [xcomas@fau.edu](mailto:xcomas@fau.edu), and James Nolan, Rutgers University, Newark, NJ USA, email: [jtnolan@pegasus.rutgers.edu](mailto:jtnolan@pegasus.rutgers.edu)

## NS06 Uncertainty in Near Surface Geophysical Data Interpretation: Implications and Developments

The assessment of uncertainty in near surface geophysical data interpretation has critical implications for resource exploration, data acquisition and modeling, and development endeavors. However, risk analysis has been largely under-emphasized in near surface applications. This session invites papers that highlight the implications of uncertainty in near surface geophysical data interpretations and describe techniques for quantifying and understanding causes of uncertainty. Recent utilization of advanced geostatistical techniques are of particular interest in this session.

Conveners: Yevgeniy A. Kontar, Head, Geophysics Section, Illinois State Geological Survey, 615 East Peabody Drive, Champaign, IL 61820-6964 USA, email: [kontar@isgs.uiuc.edu](mailto:kontar@isgs.uiuc.edu), Abdelmoneam Raef, Geophysics Section, Illinois State Geological Survey, 615 East Peabody Drive, Champaign, IL 61820-6964 USA, email: [raef@isgs.uiuc.edu](mailto:raef@isgs.uiuc.edu), Susan McGeary, Chair, Department of Geological Sciences, College of Marine and Earth Studies, University of Delaware, Newark, DE 19716 USA, email: [smcgeary@udel.edu](mailto:smcgeary@udel.edu), and John H. McBride, Chair, Department of Geological Sciences, Brigham Young University, PO Box 24606, Provo, UT 84602 USA, email: [mcbseis@gmail.com](mailto:mcbseis@gmail.com)

## NS07 Near Surface Geophysics: General Contributions

This session solicits contributions from a broad range of topics of general interest to the Near Surface Geophysics community. Abstracts focusing on data acquisition, modeling, interpretation and novel case studies are welcome.

Conveners: Lee Slater, Rutgers University-Newark, USA, email: [lslater@andromeda.rutgers.edu](mailto:lslater@andromeda.rutgers.edu)

Near Surface Geophysics also presents jointly with the following Special Sessions:

H05 Site Characterization and Hydrologic Modeling

HG05 Advances in Understanding Groundwater Flow in Karst Systems

HH01 General Contributions in Hydrogeophysics

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### 3. AGU Chapman Conference on Biogeophysics (Estella Atekwana & Lee Slater, Conveners)

AGU Chapman Conferences are small, highly focused meetings that provide significant time for discussion and interaction among the participants. NS is sponsoring the Chapman Conference on 'Biogeophysics' to be held in Portland (ME), October 10-16, 2008. The objective of this conference is to bring together geophysicists, biophysicists, geochemists, geomicrobiologists, and environmental microbiologists conducting multidisciplinary research with potential impact on the evolving field of biogeophysics in order to define the current state of the science, identify the critical questions facing the community and to generate a roadmap for firmly establishing biogeophysics as a subdiscipline of earth science research. Further details regarding this conference, including the composition of the Program Committee, travel support, accommodation, etc., will follow in the February newsletter.

Please contact Estella Atekwana ([estella.atkwana@okstate.edu](mailto:estella.atkwana@okstate.edu)) and Lee Slater ([lslater@andromeda.rutgers.edu](mailto:lslater@andromeda.rutgers.edu)) if you are interested in participating in this conference.

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#### 4. IAHR International Groundwater Symposium

The next IAHR International Groundwater Symposium will be held in Istanbul, Turkey from June 18 to 20, 2008. The title of the Symposium is "Flow and Transport in Heterogeneous Subsurface Formations: Theory, Modeling & Applications".

The purpose of the Symposium is to bring together researchers focused on fundamental laboratory-scale experimentation and mathematical modeling of flow and transport in natural subsurface systems with hydrogeologists, geologists, geophysicists and engineers working on field applications and groundwater management problems. The Symposium will provide a forum for the exchange of ideas and expertise among the various research and applied groups, for better understanding of the complex, coupled and scale-dependent processes governing flow and transport in porous and fractured media.

The deadline for Abstracts submission is January 15, 2008.

The Symposium will cover a broad list of topics related to water flow and contaminant transport in saturated/unsaturated zone in both porous as well as fractured media. The Symposium will also include several sessions related to the site characterization that may be of interest to the Near Surface Geophysics focus group, namely: "Characterization of Heterogeneous Subsurface Environments", "Upscaling and Parameter Identification", and "Field Methods to Reduce Parameter Uncertainty in Models".

For further information please refer to the Symposium Webpage: <http://www.iahr-gw2008.net>

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#### 5. EGU session on shallow seismics and georadar

We would like to draw to your attention the following session at the European Geosciences Union (EGU) General Assembly: SM14 "General session on shallow seismics and georadar". The conference is held in Vienna, Austria, April 13-18, 2008. Abstract submissions deadline is January 14, 2008. All meeting details can be found at the conference website: <http://meetings.copernicus.org/egu2008/>

The session description is included below.

See you in Vienna!

Lars Nielsen, Univ. Copenhagen

Christof Müller, Univ. Kiel

#### SESSION SM14

High-resolution near-surface geological mapping and geophysical exploration often rely on the use of ground penetrating radar (GPR) and seismic methods. The aim of this general session is to present different practical and theoretical aspects of the newest and the state-of-the-art GPR and seismic techniques, which are designed for detailed imaging of the physical properties of the near-surface layers of the Earth. We invite papers that describe the development of new methods and the practical implementation of the techniques. Case studies that show the application of the

different methods in different environments and studies that integrate the GPR and seismic methods with geoelectrical, hydrological, geochemical, well logging or other types of data are of special interest.

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## 6. Special Issue on Hydrogeophysics - Methods and Processes in EAGE journal of Near Surface Geophysics

Groundwater is an increasingly scarce and fragile resource and there is wide recognition of the challenges we face in effectively protecting and sustainably managing clean sources of water for human consumption and agricultural uses. The emerging field of 'Hydrogeophysics', being the development of geophysical methodologies to explore and assess hydrological relevant properties, structures and processes, has a pivotal role to play in achieving these objectives. In response to the rapid expansion of research in this exciting field, the journal of Near Surface Geophysics is going to produce a 'Special Issue on Hydrogeophysics' with the objective to collect the currently most pertinent research in this field and to create a widely-used, authoritative reference volume.

This special issue is a joint venture of the European Association of Geoscientists and Engineers (EAGE), the publisher of Near Surface Geophysics, and the Society of Exploration Geophysics (SEG) to enhance communication between research communities throughout the world, and ensure widespread and effective dissemination of the latest work and results. It is therefore planned to distribute print versions of this special issue, and in addition we investigate the possibility of online access, to all EAGE-NSGD and SEG-NSGS members.

Topics of interest include, but are not necessarily limited to:

Hydrogeophysical measurement, assessment, and monitoring techniques; New and emerging hydrogeophysical methods; Classical geophysical methods revisited, improved and adapted for hydrogeophysics; Integration, modeling and inversion of geophysical and hydrological data; Geophysical characterization of the hydrogeologic framework; Geophysical estimation of petrophysical and hydraulic parameters; Case histories.

The guest editors of this special issue will ensure both its topical focus as well as conformity with the high quality standards of Near Surface Geophysics. Authors are encouraged to contribute high-level technical research papers. Please inform the EAGE Editorial Office, Ms. Wendel van der Sluis ([ws@eage.org](mailto:ws@eage.org)), about your intention to contribute and provide a one-page draft abstract by 1 March 2008.

Guest Editors:

Louise Pellerin, Green Engineering, Inc., [pellerin@ak.net](mailto:pellerin@ak.net), Klaus Holliger, University of Lausanne, [klaus.holliger@unil.ch](mailto:klaus.holliger@unil.ch), Lee Slater, Rutgers University, [lslater@andromeda.rutgers.edu](mailto:lslater@andromeda.rutgers.edu), Ugur Yaramanci, Berlin University of Technology, [yaramanci@tu-berlin.de](mailto:yaramanci@tu-berlin.de)

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## 7. AAPG short course announcement: Near Surface Seismic Reflection Processing

The AAPG Division of Environmental Geosciences announces its April 2008 short course, Near-Surface Seismic Reflection Processing

Dates and Times: April 19-20, 2008. Saturday, 8:30 a.m. to 5:00 p.m., with optional evening session 6:00-7:30 p.m.; Sunday, 9:00 a.m. to 12:00 p.m.

Location: Computer Training Laboratory, Southwest Research Institute®, San Antonio, Texas

Instructor: Roger Young (University of Oklahoma, Norman, OK)

Registration Limit: 20

Fee: \$385

Includes: A Lab Manual of Seismic Processing (EAGE book) and a CD-ROM containing all short course notes, the complete SPW processing software package keyed to the seismic data set, the seismic data and all intermediate processing results generated during the short course. Fee also includes breakfast snacks, lunch, and refreshments. Optional Saturday-evening session includes a pizza dinner and a lecture on the spectral decomposition method of transforming seismic data to a higher frequency representation (comparable to a sonic log) and a hands-on opportunity to implement same.

Intended audience: Environmental geoscience professionals, graduate students, and undergraduates seeking a practical understanding of seismic methods.

Course objective: To come to an understanding, through a hands-on processing experience, of the consequences of model simplifications and mathematical assumptions imposed on the real earth during the processing of seismic data.

Course description: This is an interactive computer-based course of instruction in fundamentals of seismic reflection processing. The course was designed to extend the understanding of principles taught by lectures in an introductory college course in seismic exploration; it consists of lectures and a sequence of 12 computer laboratory exercises:

Lab 1 Reformatting seismic data; assigning geometry to seismic trace headers

Lab 2 Trace gathering

Lab 3 Velocity analysis: making semblance maps

Lab 4 Comparing semblance maps

Lab 5 Picking a semblance map; picking reflection events

Lab 6 Normal moveout correction; stacking CMP gathers

Lab 7 Editing: killing and muting traces

Lab 8 Testing and applying statistical deconvolution; bandpass filtering

Lab 9 Residual statics correction

Lab 10 Residual statics correction/velocity analysis iteration

Lab 11 Final stack

Lab 12 Post-stack time migration

To register for this course and the AAPG 2008 meeting in San Antonio, Texas, please visit:

<http://www.aapg.org/sanantonio/courses.cfm>

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## 8. Academic Position Announcements

### 8.1 Faculty: Full Professor in Geothermics, University of Neuchâtel, Switzerland

The Institute of Geology and Hydrology at the University of Neuchâtel recruits a specialist in geothermics. The candidate is expected to have a background in geology or engineering geology, with a specialization in tectonics or quantitative geology and a specific experience in deep geothermal reservoirs or in Enhanced Geothermal Systems (EGS).

Requirements: PhD and record of internationally recognized research in geothermics.

Starting date: August 1, 2008. Application files should be sent by January 31st, 2008.

For additional information contact:

Prof. François Zwahlen

CHYN - Centre of Hydrology

Rue Emile-Argand 11, CP 158

CH - 2009 Neuchâtel, Switzerland

[Francois.zwahlen@unine.ch](mailto:Francois.zwahlen@unine.ch)

[www.unine.ch/chyn](http://www.unine.ch/chyn)

8.2 PhD position in the Geophysics and Petrophysics group of Delft Univ. of Tech., Netherlands.

A PhD position available in the Geophysics and Petrophysics group of Delft Univ. of Tech., Netherlands concerns development of innovative, multidisciplinary shared-earth models for subsoil characterization. MSc in Appl. Geophysics, Physics, Math, Civil or Electrical Eng. with good quantitative skills and strength in physics and math required. More info at

<http://www.vacaturesindelft.nl/vacature.php?id=825&lang=eng> or contact [r.ghose@tudelft.nl](mailto:r.ghose@tudelft.nl).

Deadline 17 February, 2008.

8.3 Graduate Research Assistantship in the Department of Geology and Geophysics, University of Wisconsin - Madison.

We are looking for a graduate student to participate in an interdisciplinary exploration of petrophysical controls on fault damage zone development in variably cemented sandstones. The successful applicant will be involved in both field study of fault zones and laboratory characterization of materials, including measurement of ultrasonic velocity. We will consider well qualified students at both the M.S. and Ph.D. levels. Interested applicants are encouraged to contact Laurel Goodwin ([laurel@geology.wisc.edu](mailto:laurel@geology.wisc.edu)) and/or Harold Tobin ([htobin@geology.wisc.edu](mailto:htobin@geology.wisc.edu)) for additional information.

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AGU NS-Focus Group Web Page: [http://www.agu.org/focus\\_group/nsg/index.html](http://www.agu.org/focus_group/nsg/index.html)

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

George Tsoflias [tsoflias@ku.edu](mailto:tsoflias@ku.edu) <mailto:tsoflias@ku.edu>

DEADLINE: Material must be received 2 full business days prior to the first of each month. Failure to meet the deadline will likely result in missing the next issue.

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 hyperlink 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). Do not submit e-mail attachments for distribution.