

February 2007 NS-Letter

1. Abstract Submission for 2007 AGU Joint Assembly in Acapulco, Mexico
2. AGU Hydrogeophysics listserv
3. AGU NS-Focus Group Web Page
4. Position announcements
 - 4.1 Faculty position in Environmental Geomechanics at the University of Connecticut
 - 4.2 Hydrogeophysics Postdoc at U of Tennessee
5. Workshop on "High Resolution Geophysics for Shallow Water"

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1. Abstract Submission for 2007 AGU Joint Assembly in Acapulco, Mexico (from Lee Slater)

The 2007 spring AGU (American Geophysical Union)/Joint Assembly is being held 22-25 May 2007, in Acapulco, Mexico.

<http://www.agu.org/meetings/ja07/?content=home>

Abstract Submissions Deadline: 1 March 2007 23:59 UT

Ten special sessions in Near Surface Geophysics (NS) and one special session in Hydrogeophysics were approved and can be viewed at:

<http://www.agu.org/meetings/ja07/?content=search>

Please consider submitting your abstract at <http://submissions5.agu.org/submission/entrance.asp>

List of approved NS sessions for the Spring AGU/Joint Assembly

- NS01: Near Surface Geophysics: General Contributions
- NS02: Biogeophysics
- NS03: Advanced topics of the Society of Exploration Geophysicists (SEG)
- NS04: Quantifying and assessing the impact of uncertainty in geophysical estimation
- NS05: Recent trends in exploration geophysics for imaging complex geological settings
- NS06: Geophysical characterization of fractures and fractured media
- NS07: Archaeological geophysics: Recent developments
- NS08: Applications of near-surface geophysics to soil studies: from local processes to climate studies
- NS09: New and ongoing technological developments in near-surface geophysics
- NS10: Gas Hydrates in the Americas

List of approved Hydrogeophysics sessions for the Spring AGU/Joint Assembly

H18: Hydrogeophysics: Geophysical Imaging and Characterization of Subsurface Hydrological Properties and Processes

NS01: Near Surface Geophysics: General Contributions

Convener: Lee Slater, Rutgers University, USA, lslater@andromeda.rutgers.edu

Description: 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.

NS02: Biogeophysics

Conveners:

Estella Atekwana, Oklahoma State University, estella.atekwana@okstate.edu
Lee Slater, Rutgers University, lslater@andromeda.rutgers.edu
Eliot Atekwana, Oklahoma State University, eliot.atekwana@okstate.edu
Dimitrios Ntarlagiannis, Rutgers University, dimntar@pegasus.rutgers.edu

Description: Biogeophysics refers to the application of geophysical methods to observe microbial processes in the subsurface. Bacteria have been documented to play an important role in geologic processes, however, their role in the alteration of geophysical properties of rocks and sediments is not well understood nor has it been thoroughly investigated. Microbial activity is critical to the degradation of organic contaminants and to the removal of heavy metals from solution.

Consequently, biogeophysical methods may ultimately evolve into non-invasive tools for long-term monitoring of microbial processes.

Abstracts that focus on laboratory and field-scale studies of (1) geophysical properties of bacteria and their interaction with geologic matrices or contaminants, (2) the geophysical signatures associated with microbial processes in the earth, (3) microbial rock interactions (geomicrobiology) with implications for geophysical measurements, and (4) geophysical investigations of bacteria activity in extreme environments (e.g., extra terrestrial environments, deep ocean

biosphere) are solicited here. Biogeophysics student travel awards are available to student first authors and will be awarded on a merit basis.

NS03: Advanced topics of the Society of Exploration Geophysicists (SEG)

Conveners:

Nader C. Dutta, Schlumberger, Ndutta@slb.com
Kurt Martin Strack, KMS Technologies, kurt@kmstechnologies.com

Description: The use of technology has significantly increased in exploration geophysics during the past decades. Recently, the oil industry has been pursuing various advanced topics in seismic data acquisition, processing and interpretation as well as in

new areas such as gas hydrate exploration and controlled source electromagnetics. This is being supported by a new generation of logging tools and computing methods. Contributions that demonstrate how such new technologies are advancing the 3D characterization of the earth are solicited here.

NS04: Quantifying and assessing the impact of uncertainty in geophysical estimation

Conveners:

James Irving, Universite de Lausanne, jdirving@pangea.stanford.edu
Vanessa Mitchell, Stanford University, vmitchel@pangea.stanford.edu
Partha Routh, Boise State University, routh@cgiss.boisestate.edu
Chester Weiss, Sandia National Laboratories, cjweiss@sandia.gov

Description: We invite papers that examine the uncertainty present in geophysical data acquisition, data processing, forward model building, inversion, and rock-physics transforms. The session is intended to address the need to evaluate the causes and impact of uncertainty at each of these stages, and the way in which uncertainty propagates from one stage to the next. We seek to illustrate various techniques for quantifying and integrating the degree of uncertainty in resultant models. This session will ultimately help us to effectively communicate uncertainty to end users, making geophysical methods more accessible to a wider range of near-surface applications.

NS05: Recent trends in exploration geophysics for imaging complex geological settings

Conveners:

Carlos Calderón-Macías, GX Technology, ccalderon@gxt.com
Carlos Ortiz-Alemán, Mexican Institute of Petroleum, jcortiz@imp.mx
Jaime Ramos-Martinez, Mexican Institute of Petroleum, jrmartin@imp.mx

Description: Recent advances in data acquisition and processing have advanced the range of geophysical imaging to increasingly complex geologic media. Challenges in describing subsurface properties in such realistic media, require the integration of different sources of information and the understanding of phenomena which were neglected in the past. Complex imaging problems such as subsalt characterization can benefit from the integration of potential and seismic methods. A particular topic of interest corresponds to the use of rock physics models and petrophysical information for constraining seismic inversion. Description of novel seismic modeling and inversion methods, as well as integration of seismic with non-seismic methods are encouraged for the session.

NS06: Geophysical characterization of fractures and fractured media

Conveners:

DeBonne Natalie Wishart, Rutgers University, debonnewishart@yahoo.com
Christopher Juhlin, Uppsala Universitet, Christopher.Juhlin@geo.uu.se

Description: Fractured rock aquifers are becoming increasingly important as sources of groundwater supply. At the same time, fractures are potential pathways for the migration of contaminants in near surface geologic environments. The characterization of fractured rock aquifers is particularly difficult due to anisotropy, heterogeneity and the effect of scale. Geophysical methods provide unique opportunities for either (1) the non-invasive, direct detection of fractures, or (2) the quantification of anisotropy due to fractures in porous media. Abstracts focused on laboratory-scale, field-scale and/or numerical studies of fractured media using geophysical methods are solicited here.

NS07: Archaeological geophysics: Recent developments

Conveners:

Luis Barba, Universidad Nacional Autonoma de Mexico, barba@servidor.unam.mx
Cornelius Meyer, Archaeology, cornelius@eastern-atlas.com

Description: Recent developments in instrumentation and methods have opened new avenues for innovative geophysical studies in archaeological investigations, with increased spatial resolution. New approaches in archaeological research focusing more on the social, cultural and economic roles of archaeological landscapes and settlement areas may be effectively supported by high resolution geophysical techniques and remote sensing methods including new airborne applications. We seek contributions that highlight the relationship between archaeological objectives, geophysical prospection techniques and the final archaeological interpretation. Geophysical investigations of archeological sites in urban areas are particularly encouraged.

NS08: Applications of near-surface geophysics to soil studies: from local processes to climate studies

Conveners:

Xavier Comas, University of Maine, xcomas@pegasus.rutgers.edu
Dimitrios Ntarlagiannis, Rutgers University, dimntar@pegasus.rutgers.edu

Description: Soils perform many physical, chemical and biologic functions, and therefore constitute one of our most important natural resources. Soils are directly related to carbon and nutrient cycling, and play a major role in regulating atmospheric fluxes. However, the understanding of soil processes and soil-atmosphere fluxes is still incomplete and techniques capable to contribute to this knowledge with enough temporal resolution and spatial coverage are lacking. Abstracts focusing on laboratory and field-scale studies of (1) geophysical monitoring of soil heterogeneities and their interaction with biogeochemical cycles, and/or (2) the geophysical signatures associated with soil-atmosphere fluxes, are solicited here. Studies ranging from single point measurements (e.g. time-domain reflectometry (TDR), TDR-like

methods) to larger scale methodologies with implications for the monitoring of geochemical and/or microbiological processes related to climate modeling in soils are of particular interest.

NS09: New and ongoing technological developments in near-surface geophysics

Conveners:

Louise Pellerin, Green Engineering, Inc, pellerin@ak.net
Esben Auken, University of Aarhus, esben.auken@geo.au.dk

Description: In geotechnical and hydrological investigations, humanitarian endeavors and resource exploration, new technologies and the continuing development of existing technologies are needed to enhance resolution, increase efficiency and recover physical properties from geophysical measurements. Developments are needed in instrumentation and software for land, marine and airborne systems. We invite papers that are advancing GPR, seismic, geoelectric, electromagnetic and potential fields methods. New and ongoing developments in instrumentation, processing, modeling or inversion as applied to the near surface are welcome.

NS10: Gas Hydrates in the Americas

Conveners:

Deborah R. Hutchinson, US Geological Survey, dhutchinson@usgs.gov
Roberto A Figueroa, Pemex-PEP, rfigueroaab@pep.pemex.com

Description: Some of the best documented occurrences of natural gas hydrates are in the Americas, ranging from permafrost deposits from the North Slope of Alaska to massive deposits in the Middle America trench to disseminated gas hydrate off Peru. Naturally occurring gas hydrates are known from a variety of geologic settings but questions persist about their potential roles as energy resources, as seafloor hazards, and in global climate change. Numerous field, laboratory, and modeling studies are revealing the distribution and properties of natural gas hydrates in ways that are beginning to answer questions about the ways to produce them for energy, the processes that form and dissociate them from local to regional scales, the unusual life forms sometimes associated with them, the characteristics and nature of fluid fluxes in the hydrate reservoir, and how to best measure, control, and observe these varied phenomenon. This session offers the opportunity to present and exchange the latest research on naturally occurring gas hydrates in the Americas.

H18: Hydrogeophysics: Geophysical Imaging and Characterization of Subsurface Hydrological Properties and Processes

Conveners:

Andreas Kemna, Agrosphere Institute (ICG-IV), a.kemna@fz-juelich.de
Niklas Linde, ETH-Swiss Federal Institute of Technology, linde@cerege.fr

Thomas Günther, Leibniz Institute of Applied Geosciences, thomas.guenther@gga-hannover.de

Description: Knowledge of shallow subsurface hydrological properties and processes is essential to address a wide range of societal issues, including evaluation and management of water and land resources, and monitoring and remediation of contaminated soils and groundwater. Hydrogeophysics integrates non-invasive geophysical imaging and characterization techniques with hydrogeological data and/or hydrological models to provide insights into soil and aquifer properties and processes. This session will present recent advances in hydrogeophysical approaches and applications, ranging from the laboratory to the field and regional scale. It will bring together hydrologists and geophysicists to examine the latest developments in this interdisciplinary field, as well as to explore emerging areas of research. We encourage contributions focusing on the imaging and characterization of hydraulic properties governing water flow and solute transport; the imaging, monitoring, and characterization of water dynamics, contaminant plumes, and preferential flow; as well as the monitoring and characterization of biogeochemical system transformations, associated for instance with remedial activity.

Contributions on hydrogeophysical modeling and inversion approaches, data fusion methods, as well as petrophysical parameter relationships linking measured geophysical properties to the hydrological parameters and state variables of interest are likewise welcome. Given the venue of the conference, we particularly encourage contributions that describe research of relevance to Central and South America.

List of approved cosponsored sessions for the Spring AGU/Joint Assembly

B05: Contaminant Transport, Remediation, and Detection in Subsurface Environments

B09: Remote Sensing and Modeling of Hydrologic and Methane Dynamics in Natural Wetlands

GP06: New Discoveries in Magnetic and Gravity Anomaly Interpretation Methodologies and Their Innovative Application for Geologic, Environmental, Exploration and Planetary Scale Potential-field Data

H08: Remote Sensing, Data Assimilation and Uncertainty in Hydrologic Modeling

H15: Advances in Subsurface Characterization

H18: Hydrogeophysics: Geophysical Imaging and Characterization of Subsurface Hydrological Properties and Processes

H26: Spatial Scaling issues in Hydrology and Remote Sensing

H35: Environmental Vadose Zone Hydrology - Poster Only

H37: Coastal Aquifers: Saltwater Intrusion and Submarine Groundwater Discharge

IN06: ABAQUS in Geoscientific Applications

IN07: The Role of Visualization in Addressing Complex Geophysical Problems

NG04: Complex Systems and Nonlinear Geophysics: New Developments

S07: Exploration Seismology - Innovative Methods in Acquisition, Imaging, and Modeling

T09: Paleoseismology

T10: The Cretaceous/Tertiary (K/T) boundary in the Gulf of Mexico and the Caribbean: new assessments from the ICDP YAX-I drill-core and beyond

V23: Deep drilling at volcanic areas: developments in volcanology and perspectives for geothermal energy exploitation

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2. AGU Hydrogeophysics listserv

From Andrew Binley (Lancaster) & Kamini Singha (Penn State) on behalf of the AGU Hydrogeophysics Technical Committee.

We have just setup an AGU Hydrogeophysics listserv to facilitate communication among the members of the hydrogeophysics community, and provide a forum for sharing information.

To subscribe send a blank email to:
L-AGU-HGP-subscribe-request@lists.psu.edu

We ask that members be considerate of the other members of this list, and do not spam the group by using "reply all" when looking only to contact the message sender, or by sending advertisements that are not of general interest.

To post to the list send a message to: AGU-HGP@psu.edu

To unsubscribe send a blank email to:
L-AGU-HGP-unsubscribe-request@lists.psu.edu

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3. AGU NS-Focus Group Web Page (from Rhett Herman, web page editor)

We are in the process of developing the NS website. It is listed with the other AGU Focus Group pages at <http://www.agu.org/inside/>, with the direct link to the page being http://www.agu.org/focus_group/nsg/index.html. Our goal is to make this a resource to the NS community and we welcome suggestions as to what would help us develop this resource. Send your comments and content for the website to Rhett Herman (rherman@radford.edu).

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4.1 Faculty position in Environmental Geomechanics at the University of Connecticut

The Department of Civil and Environmental Engineering invites applications for a tenure-track Assistant Professor position in Environmental Geomechanics, effective Fall 2007. The successful candidate should have research interests in multiscale, multiphysics, theoretical- and/or experimental-based modeling of geosystems (e.g., geomaterials, structures related to geo-engineering). The candidate's research agenda should complement and enhance existing Department strengths in structural engineering, applied mechanics, transportation engineering, and environmental engineering and promote Department research interests in sustainable systems. Applicants with expertise in one or more of the following areas are of particular interest: modeling effects of heat, mass and contaminant transport on the thermo-hydro-chemo-mechanical behaviour of deformable geomaterials; contact mechanics of particulate/granular media; underground structures and their monitoring; mechanics of layered media in geo-engineering; long-term behavior of underground waste repositories and/or landfills; modeling of mechanical behavior of poro-elastic and poro-viscoelastic earth materials; modeling flow and fate of pollutants in unsaturated soils under non-isothermal conditions; and modeling gas and liquid flow in soils, clay liners, compacted clays, or fractured rock.

Complete position announcement and application submission information can be viewed at: http://www.engr.uconn.edu/cee/cee_emp_gm.html

Screening of applications will begin February 15, 2007

4.2 Hydrogeophysics Postdoc at U of Tennessee

There is an immediate opening in the Environmental Geophysics Research (EGR) Laboratory within the Department of Earth & Planetary Sciences at the University of Tennessee for a postdoctoral research associate. The postdoc will be expected to take a principle role in acquisition, data processing, and data interpretation/modeling of time-lapse surface seismic refraction tomography and time-lapse, large-array surface 3D electrical resistivity/SP with the objectives of: (i) monitoring short- and long-term fluctuations of soil moisture/water table and the effect of those fluctuations on natural attenuation of contaminants, and (ii) tracking temporal variations in the natural attenuation front and zones of enhanced remediation. "Time-lapse" in this instance will involve coincident daily and/or weekly surveys over a period of up to three years at several locations on the site.

The postdoc is expected to be an exceptional researcher who has (1) a PhD in hydrogeophysics-related research, (2) a demonstrated record of independence in research, and (3) outstanding research team integration skills (verbal and written). Candidates should email their CV, specific research interests, and list of four references, to: Dr. Gregory S. Baker (gbaker@tennessee.edu).

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5. Workshop on "High Resolution Geophysics for Shallow Water" (from John Bradford)

Dear Colleagues:

We would like to draw your attention to a workshop titled "High Resolution Geophysics for Shallow Water" that is being held in London, UK on June 10, 2007 as part of the London 2007 EAGE Conference and Exhibition (see www.eage.org or details attached below). The goal of the workshop is to gather scientists involved in shallow water geophysics from around the world to discuss new technologies and trends, with the aim of creating a strong cross-fertilization among engineering, environmental players and oil and gas community.

The workshop will deal with both seismic and non-seismic methods. We are organizing the non-seismic components, with a preliminary programme as follows:

- Invited lecture on constitutive laws and mixing rules (20 min)
- Invited lecture on geoelectric and low frequency electromagnetic (30 min)
- Invited lecture on GPR (30 min)
- Poster presentations and discussion (1h 30 min)
- Conclusion (30 min)

If you have interests in the application or modeling of high resolution electrical, EM, or GPR methods in shallow water we invite you to join us. We also invite you to submit suggestions for poster presentations.

Five minutes will be assigned to the presentation of each poster and the EAGE has plans to accept papers on selected contributions for publication in a special issue of an EAGE journal (e.g. Geophysical Prospecting). Due to organizational requirements, we would request that you send your proposed poster title to Workshop co-convener Luigi Sambuelli

(luigi.sambuelli@polito.it) by Feb. 16. Thereafter, we would require a 4-page abstract by March 15, 2007.

Best regards

The steering committee of the non-seismic session.

Luigi Sambuelli
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To contribute material to the NS-letter e-mail before the first of the month to:

George Tsoflias tsoflias@ku.edu