

August 2010 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 August 2010:

Primary affiliation: 691 members; Secondary: 2316 members

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1. Announcement: Parting message from the Near-Surface Executive Committee (from Lee Slater)

It has been both a great honor and a pleasure to serve as the Chair of the Near Surface Geophysics Focus Group (NSFG) during its second term covering July 1, 2008 – June 30, 2010. Our focus group has continued to show healthy growth over the last two years, now exceeding 3000 members. I was immensely fortunate to receive unending enthusiasm and support from Louise Pellerin (Vice Chair), George Tsoflias (Secretary and Newsletter Editor until March 2010), Rhett Herman (Webmaster) and our Executive Committee during this second term.

Looking back on our efforts during the second term, I am most proud of the work we did to enhance student opportunities and participation within the NSFG community. In this respect, I am very grateful to Elliot Grunewald, who did an astonishing job serving as the first NSFG Student Representative and being the face of our student community. Elliot took on this position with endless enthusiasm, organizing student activities at AGU meetings, reaching out to students at our luncheons, setting up a student section of our website, developing a student Wiki and, most importantly, engaging one to one with students in order to promote their participation within NSFG. The success that we have had in engaging our student members has been acknowledged by senior AGU staff as well as senior members of other sections/focus groups. In fact, other sections and focus groups at AGU now plan to follow our lead by adding student representation to their own executive committees. I hope that they are as fortunate as we have been in the service Elliot provided during the second term. Louise Pellerin, our new Chair, also deserves much credit for enhancing our student activities through her creative outreach and campaigning for sponsorship that led to two social events sponsored by some of our “high street brand” geophysical instrument suppliers that regularly attend AGU meetings. In this respect, the most memorable event of my term was the luncheon at the Fall 2009 AGU meeting, whereby Louise’s enthusiastic fund-raising resulted in 30 students attending the luncheon at no cost. It was immensely rewarding to see the new blood of our community so well represented and I look forward to seeing these members emerge as the next generation of NSFG scientists in coming years.

Although I do not have space to thank the many people that helped with our efforts, I must specifically acknowledge the dedication of both George Tsoflias (Newsletter Editor) and Rhett Herman (Webmaster) in their service as the critical points of communication with our members. Our newsletter never failed to appear packed full of information and our website must surely be the envy of all other sections and focus groups within the AGU. With Louise Pellerin (Chair), George Tsoflias (Vice-Chair), Rhett Herman (Secretary) and Xavier Comas (Newsletter Editor) now leading our focus group, I look forward very much to seeing NSFG continue to grow in both membership and in visibility within the broader AGU community. NSFG is now firmly established as one of the larger and most active focus groups within the AGU community. As members we have all contributed to its success. I very much hope that you share my pride in these achievements.

Lee Slater, NSFG Past-Chair

2. New AGU Governance & the AGU Leadership Conference, 8-12 June 2010, DC (from George Tsoulias)

Two years ago AGU embarked on a major reorganization that resulted in a new governance structure. We now have the Board of Directors (responsible for business affairs), the AGU Council (responsible for scientific affairs), and the AGU Executive Director (facilitating Board and Council interaction). Under the new governance structure, each AGU Section President and President-Elect and each Focus Group Chair and Vice-Chair serve on the AGU Council with equal voting rights and the ability to represent the diverse perspectives of the entire AGU community (about 58,200 members from 137 countries).

The new Board and Council members met at the first AGU Leadership Conference, June 8-10, 2010. We worked with the new strategic plan, established goals for the next 3-5 years and considered long-term challenges and strategies for AGU in an environment of change. I encourage you to read AGU President Mike McPhaden's message "Change, Growth and the New AGU" (http://www.agu.org/about/presidents_msg/index.shtml) about AGU's goals and future direction.

With the new governance structure in place, the strategic plan approved and the goals set, over the next two years we will work on implementing the new initiatives which will shape the new AGU. Near Surface Focus Group (NSFG) Chair Louise Pellerin and I will keep the Focus Group informed of new developments and will seek membership input on critical issues. This is a great opportunity for NSFG to help guide the future of AGU and I encourage every member of our near-surface geophysics community to look for opportunities to serve NSFG.

George Tsoulias, NSFG Vice-Chair

3. 2010 Fall AGU Meeting, 13-17 December 2010, San Francisco

3.1. Near-Surface Geophysics sessions (from Chester Weiss)

Proposed Near-Surface Geophysics sessions for the 2010 AGU Fall Meeting (<http://www.agu.org/meetings/fm10/>)
Abstract deadline: 2 September 2010

NS01: Near-Surface Geophysics General Contributions

Conveners: Chester Weiss, Virginia Tech, cjweiss@vt.edu; Leif Cox, Montana Tech, lcx@mtech.edu

NS02: Inversion II: Uncertainty and Managing the Unknown

Cosponsors: Geomagnetism and Paleomagnetism, Hydrology, Mineral and Rock Physics, Nonlinear Geophysics, Seismology

Conveners: Behnam Jafarpour, Texas A&M University, behnam@pe.tamu.edu

Description: Subsurface characterization and modeling play a central role in effective exploitation of underground hydrological, mineral, and energy resources. Inverse modeling is commonly applied to infer the spatial distribution of rock physical properties from indirect and incomplete measurements. This session encourages new contributions in inverse modeling methods to: 1) improve solution stability, non-uniqueness, and computational complexity, 2) reconcile data and model resolutions, 3) incorporate prior uncertainties, 4) combine data with different coverage, resolution, and accuracy, and 5) quantify forecast uncertainties.

NS03: Biogeophysics: Towards Modeling of Geophysical Signatures of Microbial Processes in the Earth

Cosponsors: Biogeosciences, Cryosphere, Global Environmental Change, Geomagnetism and Paleomagnetism, Hydrology, Mineral and Rock Physics, Seismology

Conveners: Lee Slater, Rutgers-Newark, lslater@andromeda.rutgers.edu; Estella Atekwana, Oklahoma State University, estella.atekwana@okstate.edu

Description: Biogeophysics deals with the geophysical signatures of microbial processes in the Earth. We invite contributions that offer new insights into the linkages between geophysical signatures and microbial processes that may support the development of model frameworks. We welcome observation-based contributions across a wide range of length scales - from individual cells, biofilms and up to field-scale signatures. We particularly encourage

theoretical, numerical and/or conceptual model developments, along with novel applications such as those found in remote or extreme environments, carbon sequestration and methane hydrates exploration.

NS04: Joint Interpretation of Different Geophysical Data for Natural Resources Characterization

Cosponsor: Seismology

Conveners: Tim Seher, Massachusetts Institute of Technology, seher@mit.edu; Michael Commer, Lawrence Berkeley National Laboratory, mcommer@lbl.gov

Description: Joint inversion of complementary field data is important for (at least) two reasons: First, the combined sensitivities help create more detailed and reliable subsurface models. Second, the joint analysis of different geophysical data can be used to estimate rock physical parameters. Indeed, parameters like fluid saturation, permeability, fracture density or porosity are often more interesting than the geophysical attributes themselves. Quantitative data integration is an area of active research. This session aims to bring together geophysicists from academia and industry to present the state-of-the art in data integration and to define the main challenges for future research.

NS05: Airborne Geophysics for Geohazards and Environmental Problems

Cosponsors: Geodesy, Geomagnetism and Paleomagnetism, Hydrology, Natural Hazards, Seismology, Volcanology, Geochemistry, and Petrology

Conveners: Shigeo Okuma, Geological Survey Japan, AIST, s.okuma@aist.go.jp; Maria Deszcz-Pan, USGS, maryla@usgs.gov

Description: Airborne geophysics maps large, remote and/or rugged terrain, making it an efficient and effective tool for volcano, earthquake and landslide hazard studies as well as environmental problems such as hydrogeological characterization. Gravity, magnetic, EM, radiometric, spectral and thermal instruments are typically mounted on helicopters and fixed wing aircraft, but instrumentation on unoccupied aerial vehicles is increasing. Airborne monitoring and repeated measurements are suitable for detecting temporal and spatial variations related to geohazards and environmental problems. We invite case histories and studies that are advancing the developments of instrumentation, processing, and modeling of airborne geophysical data.

NS06: Inversion I: Back to Basics

Cosponsors: Geomagnetism and Paleomagnetism, Mineral and Rock Physics, Nonlinear Geophysics, Seismology

Conveners: Thomas Lecocq, Royal Observatory of Belgium, Thomas.Lecocq@seismology.be; Rhett Herman, Radford University, rherman@radford.edu

Description: Inversion software is used in almost every branch of geophysics. Many researchers use inversion software written by others which work as 'black boxes' for users. Users adjust parameters to get the final output without fully knowing what the software is doing. We encourage contributions which go back to the basics of inversion so users will have an intuitive knowledge of the software. We encourage submissions such as 'how-to' tutorial sessions for beginners to invert simple data matrices, and how uncertainty evaluations and even more complex inversions are performed. General inversion models that may handle different types of data are encouraged. Datasets will be available on the AGU-NS focus group website for presenters to use in their examples. We strongly encourage students to submit.

NS07: Beyond the Case History: Novel Seismic Methods and Applications

Cosponsors: Seismology

Conveners: Seth Haines, USGS, shaines@usgs.gov; Juan Lorenzo, Louisiana State University, gllore@lsu.edu; Thomas Blum, Boise State University, thomasblum@u.boisestate.edu; Andy Lamb, Boise State University, andylamb@cgiss.boisestate.edu

Description: Seismic methods can offer a wealth of information in near-surface studies and new developments provide improved characterization of a range of targets. We seek presentations that demonstrate the potential of seismic methods (P- and/or S-wave reflection, refraction, surface-wave, VSP, or combinations thereof) to provide useful information with bearing on problems in the near surface and beyond. Suggestions include unique methodologies, novel applications, and/or integration with diverse data types. We particularly encourage presentations that include estimation of relevant physical properties and/or that yield results with uncertainty estimates.

NS08: The Fractional Calculus of a Complex Earth

Cosponsors: Hydrology, Nonlinear Geophysics

Conveners: Chester Weiss, Virginia Tech, cjweiss@vt.edu; Mark Everett, Texas A&M, everett@geo.tamu.edu
Description: A growing number of seemingly disparate studies in the geosciences have found common ground in their application of fractional calculus as a means to accommodate the intrinsic complexity of geologic materials and processes - especially those problems rooted in transport phenomena and the effect of spatially correlated geologic fabric and textures. This session invites contributions which investigate the link between spatiotemporal geocomplexity, and the language and methods of fractional calculus, particularly as it applies to the inference of rock properties and processes therein from the analysis of geophysical observables. Contributions from laboratory, field-based and theoretical studies are welcome.

NS09: Geophysical Studies of Concentrated Animal Feeding Operations (CAFO)

Conveners: Andrew Pilant, US EPA R&D, pilant.drew@epa.gov; Wayne Robarge, North Carolina State Univ., wayne_robarge@ncsu.edu

Description: CAFOs are concentrated sources of multiple human and ecosystem stressors: reactive nitrogen (ammonia, nitrates, methane), phosphorous, fecal matter, bacteria, pharmaceuticals, pesticides, salts and metals. CAFO gases may cause N imbalances and respiratory issues. CAFO effluent leaked from ponds and sprayed on agricultural fields may pollute surface and groundwater, and contribute to fish kills, hypoxia and algal blooms. This session will bring together researchers using geophysical techniques to measure and monitor CAFOs and the pathogens, gas, liquid and solids they produce and emit to the surrounding environment. The goal is to better understand the human and environmental impacts of animal factory farms.

3.2. Hydrogeophysics sessions (from Niklas Linde)

Proposed Hydrogeophysics sessions for the 2010 AGU Fall Meeting (<http://www.agu.org/meetings/fm10/>)
Abstract deadline: 2 September 2010

H26: Hydrogeophysics: Advances in measurement, monitoring and modeling of hydrological processes
http://www.agu.org/meetings/fm10/program/scientific_session_search.php?show=detail&sessid=354

Conveners: Adam Pidlisecky and Baptiste Dafflon

H15: Hydrogeophysical data fusion: methods, scales and information content

http://www.agu.org/meetings/fm10/program/scientific_session_search.php?show=detail&sessid=343

Conveners: Andrew Binley, Ty P.A. Ferre, Johan Huisman

H60: Novel High-Resolution Field and Modeling Approaches to Aquifer Connectivity Characterization

http://www.agu.org/meetings/fm10/program/scientific_session_search.php?show=detail&sessid=388

Conveners: Chris Graham, Luisa Hopp, Kristopher Kuhlman, Bwalya Malama, Michael Cardiff

H70: Hydrogeophysics for Digital Soil Mapping: Novel Techniques and Applications

http://www.agu.org/meetings/fm10/program/scientific_session_search.php?show=detail&sessid=398

Conveners: Sebasti n Lambot, Roelof Versteeg, Jan Van Der Kruk, Johan Huisman, Harry Vereecken

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

Seven technical sessions are distributed across seven technical sessions' slots and a broad spectrum of near surface geophysics will be presented. The annual section's Business Meeting will be held at the convention center on an afternoon with minimal conflict to other NSG sessions. The 2010 annual Near Surface Geophysics Section (NSGS) reception will be held at the Wynkoop Brewing Company, Mercantile Room, 1634 18th St. on Tuesday Oct 19th. The reception will begin with a meeting at 6:30, followed by a dinner/social at 7:30. (No Charge to NSGS Members, Non-members can join on the spot and students are welcome: Student membership free). The Harold Mooney Award will be presented by the NSGS during the reception. The honoree is chosen by his or her peers through nominations from the membership and recommendation to the NSGS Executive Committee. The award is presented to an individual in recognition of long-term, tireless, and enthusiastic support of the near-surface geophysics community through education, outreach efforts, professional service, or development of opportunities with other professional disciplines that employ geophysics.

5. Travel Grants: CUAHSI Hydrogeophysics Facility (from Ty Ferré)

Geophysical methods hold great potential for imaging subsurface structures and monitoring subsurface processes. Hydrogeophysics is a growing area of scientific interest aimed specifically at using geophysical methods to advance hydrologic sciences. CUAHSI has recognized that we are at a critical juncture - effective integration of hydrologic and geophysical knowledge could promote rapid advances in hydrogeophysics to the clear benefit of hydrologic science. To support this initiative, we have funding from the National Science Foundation for travel grants to support direct interactions between hydrologists and geophysicists. To apply, a hydrologist (or team of hydrologists) and a geophysicist (or team of geophysicists) should submit a joint three-page proposal. The proposal would support travel for a geophysicist to visit an active hydrologic study site and to consult on the possible inclusion of geophysical methods in the investigations. The proposal should include the following:

- A description of the proposed study site and the key hydrologic questions to be addressed.
- A brief description of supporting data and a proposal for a geophysical method or methods under consideration.
- A brief description of the expected value of the geophysical data to address the hydrologic question(s).
- A brief discussion of the novelty and transferability of the proposed hydrogeophysical approach.
- A description of the expected interactions (student meetings, seminars, presentations in classes, field/lab visits) during the visit.
- A budget for the requested funds to include costs of travel and equipment shipping and/or rental.

Proposals will be accepted on a continual basis and will be rated by a panel of hydrogeophysicists; awards will be made every six months in December and June. We expect to award approximately five grants per year. The expected value of each grant is \$2000; however, slightly higher requests will be considered with justification. All interested scientists are encouraged to apply. In addition, Dr. Ferré is available to assist hydrologists in finding possible geophysical researcher collaborators.

For further information, please contact Ty Ferré at the University of Arizona (tyferre@gmail.com 520.621.2952).

6. USGS open position, Geophysical Unit, Menlo Park, CA

The Geophysical Unit of Menlo Park, US Geological Survey just opened a term position for an operational geophysicist, who in a recent grads. To view the announcement and apply, go to the <http://www.usajobs.gov> website, search for geophysicist in Menlo Park, CA for job announcement (WR-2010-0440).

Open period: Friday, July 30, 2010 to Friday, August 20, 2010

Series & Grade: GS-1313-07/09

Position information: TERM Full-Time

Salary range: \$45,923.00 - \$73,019.00 /year

Duty locations: 1 vacancy(s) in Menlo Park, CA

Key Requirements:

- * Applicants must be U.S. Citizens.
- * Suitable for Federal employment, as determined by background investigation.
- * Overnight travel of 1-5 nights per month may be required.
- * Must have a valid state driver's license and a good driving record.
- * More requirements are listed under Qualifications and Other Information.

Major Duties:

As a Geophysicist within the Geology & Geophysics Science Center, some of your specific duties will include:

-Plan and conduct the collection and processing of geophysical data, primarily gravity, magnetic, paleomagnetic, and electrical data.

-Use existing and new analytical techniques to characterize spatial patterns in geological and geophysical data.

- Author and co-author informational data and professional reports, abstracts, and presentations conveying interpretive results and new analytical methods related to geophysical studies and geological mapping.
- Operate government 4 wheel drive vehicles in off-road remote areas.

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

Xavier Comas 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.

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