

REPORT DOCUMENTATION PAGE			Form Approved OMB NO. 0704-0188		
<p>The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA, 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</p>					
1. REPORT DATE (DD-MM-YYYY) 02-07-2014		2. REPORT TYPE Final Report		3. DATES COVERED (From - To) 1-Oct-2011 - 30-Sep-2014	
4. TITLE AND SUBTITLE Support for the Symposium on the Application of Geophysics to Environmental and Engineering Problems, 2012-2014			5a. CONTRACT NUMBER W911NF-11-1-0499		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER 611102		
6. AUTHORS Various, per proceedings			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAMES AND ADDRESSES Environmental and Engineering Geophysica 1720 S. Bellaire St., Ste. 110  Denver, CO 80222 -4303			8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS (ES) U.S. Army Research Office P.O. Box 12211 Research Triangle Park, NC 27709-2211			10. SPONSOR/MONITOR'S ACRONYM(S) ARO		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S) 61362-EV-CF.4		
12. DISTRIBUTION AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other documentation.					
14. ABSTRACT Support for the Symposium on the Application of Geophysics to Environmental and Engineering Problems					
15. SUBJECT TERMS Proceedings of the Symposium for the Application of Geophysics to Environmental and Engineering Problems					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	15. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			William Doll
UU	UU	UU	UU		19b. TELEPHONE NUMBER 865-483-2548

**Report Title**

Support for the Symposium on the Application of Geophysics to Environmental and Engineering Problems, 2012-2014

**ABSTRACT**

Support for the Symposium on the Application of Geophysics to Environmental and Engineering Problems

---

**Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:**

**(a) Papers published in peer-reviewed journals (N/A for none)**

<u>Received</u>	<u>Paper</u>
-----------------	--------------

**TOTAL:**

**Number of Papers published in peer-reviewed journals:**

---

**(b) Papers published in non-peer-reviewed journals (N/A for none)**

<u>Received</u>	<u>Paper</u>
-----------------	--------------

**TOTAL:**

**Number of Papers published in non peer-reviewed journals:**

---

**(c) Presentations**

Number of Presentations: 0.00

---

**Non Peer-Reviewed Conference Proceeding publications (other than abstracts):**

Received      Paper

**TOTAL:**

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

---

**Peer-Reviewed Conference Proceeding publications (other than abstracts):**

Received      Paper

**TOTAL:**

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

---

**(d) Manuscripts**

Received      Paper

**TOTAL:**

Number of Manuscripts:

---

**Books**

Received      Book

**TOTAL:**

Received

Book Chapter

**TOTAL:**

---

**Patents Submitted**

---

**Patents Awarded**

---

**Awards**

---

**Graduate Students**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

---

**Names of Post Doctorates**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

---

**Names of Faculty Supported**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

---

**Names of Under Graduate students supported**

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
<b>FTE Equivalent:</b>	
<b>Total Number:</b>	

**Student Metrics**

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: ..... 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense ..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields:..... 0.00

**Names of Personnel receiving masters degrees**

NAME  
**Total Number:**

**Names of personnel receiving PHDs**

NAME  
**Total Number:**

**Names of other research staff**

NAME                      PERCENT SUPPORTED  
**FTE Equivalent:**  
**Total Number:**

**Sub Contractors (DD882)**

**Inventions (DD882)**

**Scientific Progress**

This does not apply to SAGEEP

**Technology Transfer**



**EEGS** Environmental and Engineering Geophysical Society

# SAGEEP 2014

**SYMPOSIUM ON THE APPLICATION OF GEOPHYSICS TO ENGINEERING & ENVIRONMENTAL PROBLEMS**

## BOSTON, MASSACHUSETTS

**Boston Marriott Copley Place  
March 16–20 2014**

**INSIDE**

- Schedule-at-a-Glance
- Technical Sessions Schedule
- Exhibit Hall & Hotel Floor Plans
- Luncheons
- EEGS Luncheon/Annual Meeting
- Student Event at Kings Boston
- Outdoor Demonstrations/Historic Trinity Church in Copley Square
- Full Day Excursion to Boston's North Shore/ Cape Anns Brewery

[WWW.EEGS.ORG/SAGEEP 2014](http://WWW.EEGS.ORG/SAGEEP 2014)



# SAGEEP 2014 SCHEDULE-AT-A-GLANCE

Sunday March 16				
8:30am-4:30pm	Rockport/Halibut Point State Park/Cape Ann Brewery/Ryan and Wood Distillery Field Trip			
8:00am-5:00pm	<b>CANCELLED SC-1: Google Earth Applications in Education and Research - Suffolk</b> Instructor: Steven Whitmeyer, James Madison University			
8:30am-4:30pm	<b>SC-2: Environmental Applications of the Induced Polarization Method - Wellesley</b> Instructors: Lee Slater and Dimitrios Ntarlagiannis, Rutgers-Newark, New Jersey			
3:30-4:30pm	Student Training Session - Harvard			
5:30-7:30pm	Ice Breaker - Exhibit Hall			
Monday March 17				
8:40-10:20am	Awards/Keynote Session: <i>Alfred William Eustes III, Colorado School of Mines - Salon E</i>			
10:20-10:40pm	Coffee in Exhibit Hall			
	<b>Simmons</b>	<b>Wellesley</b>	<b>Suffolk</b>	<b>Arlington</b>
10:40am-Noon	SPECIAL SESSION: Best of 2013 EAGE/NSGD			
12:00-1:40pm	Lunch on Own			
1:40-3:20pm	Ground Penetrating Radar (GPR)	Gravity	General and Unconventional Geophysics	Geophysics in Landfill Analysis
3:20-3:40pm	Coffee in Exhibit Hall			
4:00-6:00pm	Exhibitor Equipment Outdoor Demonstrations - Trinity Church Grounds/Copley Square (walking distance)			
6:00-11:00pm	Student Event – Kings Boston			
Tuesday March 18				
7:40-8:20am	Poster Presentations	Electromagnetics	Infrastructure	Borehole Geophysics
8:20-10:00am	Airborne Geophysics & Remote Sensing			
10:00-10:40am	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer Area			
10:40am-Noon	Airborne Geophysics & Remote Sensing (continued)	Electromagnetics (continued)	Infrastructure NDE&T for Bridges & Concrete Structures	Borehole Geophysics (continued) Hydrogeophysics
12:00-1:40pm	Luncheon: <i>Speaker John Ebel, Boston College - Salon F</i>			
1:40-3:40pm	Airborne Geophysics & Remote Sensing (continued)	Electrical-RES, IP, Self Potential	NDE&T for Bridges & Concrete Structures (continued)	Hydrogeophysics (continued)
3:40-4:00pm	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer Area			
4:00-6:00pm	Agricultural Geophysics	Electrical-RES, IP, Self Potential (continued)	Highway Geophysics	Water Resources/Supply Investigations
6:30-11:00pm	Conference Evening - Cocktails, Dinner & Wine - Salon G			
Wednesday March 19				
7:40-8:20am	Poster Presentations	Seismic Refraction/Reflection	Archaeological Geophysics	Advances in Electrical Resistivity Imaging
8:20-10:00am	Munitions Detection Systems & Software			
10:00-10:40am	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer Area			
10:40am-Noon	Munitions Detection Systems & Software (continued)	Seismic Refraction/Reflection (continued)	Archaeological Geophysics (continued)	Advances in Electrical Resistivity Imaging (continued)
12:00-1:40pm	EEGS Luncheon: <i>Speaker Steven Arcone - Salon F</i>			
1:40-3:40pm	UXO	Surface Wave & Passive Seismology	Geophysical Data Management (GIS)	NMR & Magnetics
3:40-4:00pm	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer Area			
4:00-5:40pm	Live UXO Data Analysis	Surface Wave & Passive Seismology (continued)	Karst, Tunnels & Other Cavities	NMR & Magnetics (continued)
Thursday March 20				
8:00am-5:00pm	<b>SC-3: Overview of Utility Locating Technologies - Suffolk</b> Instructor: Ralf Birken, Northeastern University			
	<b>SC-4: Multichannel Analysis of Surface Waves (MASW) Fundamentals Plus - Wellesley</b> Instructors: Choon Park, Park Seismic LLC, and Mario Carnevale, Hager Geoscience, Inc.			

# GENERAL INFORMATION

## REGISTRATION

The registration desk will be open in the registration area during the following hours.

Sunday, March 16	7:00 am – 8:00 pm
Monday, March 17	7:00 am – 7:00 pm
Tuesday, March 18	7:00 am – 6:00 pm
Wednesday, March 19	7:00 am – 5:40 pm

### Thursday, March 20 Registration

Registration will be open from 7:00 am - 9:00 am outside the Short Course rooms for on-site registrations.

### Emergency Procedures

Should an emergency arise while at SAGEEP, please go to the registration counter located outside the Exhibit Hall, or contact the Conference Center operator at the nearest telephone.

### Name Badges

Name badges are your admittance to any part of the Conference and Exhibits and some social events. Attendees without a badge will be asked to confirm their registration and be issued another badge at a charge of \$20. There will be no exceptions. Exhibitor personnel badges are restricted to use in the Exhibition Hall only.

**PLEASE BE SURE TO WEAR YOUR BADGE AT ALL TIMES.**

### Speaker Information

All speakers are encouraged to be in their presentation rooms ½ hour prior to their scheduled speaking engagement. Please visit the SAGEEP registration counter to request further assistance.

### Proceedings

A Symposium Proceedings CD-ROM is included in the full conference registration fee. Additional 2014 SAGEEP Proceedings may be ordered at the registration counter.

### Job Posting Board

The job posting board, located in the registration area outside the Exhibit Hall, is available to all attendees who want to advertise a job opening or post resumes for review.

### EEGS Information

Please visit the EEGS Bookstore, adjacent to the registration area, for membership and other society information or to purchase EEGS merchandise, books, past SAGEEP Proceedings, copies of the *Journal of Environmental & Engineering Geophysics*, and *FastTIMES*.

### Evaluation Forms

Your evaluation of the papers presented is important. Please make certain that you take a moment to fill out the forms. Evaluation boxes will be available outside each session room, in the exhibition hall and at the registration counter. Student Volunteers will also be available during the sessions to collect your completed evaluations.

### Student Networking

After Monday's Exhibitor Equipment Outdoor Demonstrations, students are invited to join others for the Student Event at 6:00 pm. Students are also encouraged to register for and attend the SAGEEP Conference Evening Event, the Luncheon on Tuesday, March 18 and the EEGS Luncheon on Wednesday, March 19. And, if you haven't volunteered to work at SAGEEP, do so at the registration counter.

## TABLE OF CONTENTS

EEGS Directors & SAGEEP Committees ....	2
Welcome to Boston, Massachusetts .....	3
Exhibitors Floor Plan & Exhibitors List .....	4
Meeting Rooms Floor Plan .....	5
Exhibition Hall Schedule .....	5
Government Sponsors .....	6
Corporate Sponsors .....	7
Corporate Members/ Cooperating Societies .....	8
Outdoor Demonstrations .....	9
Special Events .....	10
General Session, Luncheons & Conference Evening Dinner Floor Plan .....	10
Keynote Address & Luncheon Speakers....	11
Gold Medal Contribution Award.....	12
Short Courses & Workshops.....	13
EEGS Foundation.....	15
Technical Program & Poster Presentations	14-23
Exhibitors Directory.....	24-30
Publications Order Form .....	31-32

## SPECIAL MEETINGS

### EEGS BOARD MEETING

**Thurs., March 20 7:00 am – 5:00 pm**

(Continental Breakfast 7 am)

**Fri., March 21 7:00 am – 12:00 pm**

(Continental Breakfast 7 am)

Location: Regis

Chair: Catherine Skokan

### STUDENT COMMITTEE

**Mon., March 17 12:30 pm - 1:30 pm**

Location: MIT

Chair: Laura Sherrod



# EEGS DIRECTORS & SAGEEP COMMITTEES

## EEGS BOARD OF DIRECTORS

<p>President Catherine Skokan Colorado School of Mines cskokan@mines.edu</p>	<p>VP - SAGEEP Jutta Hager Hager GeoScience, Inc. jhager@hagergeoscience.com</p>	<p>At-Large Member Ron Kaufmann Spotlight Geophysical Services ron@spotlightgeo.com</p>	<p><i>JEEG</i> Editor Janet E. Simms US Army Eng. Research &amp; Dev. Ctr janet.e.simms@usace.army.mil</p>
<p>Immediate Past President Douglas E. Laymon Tetra Tech doug.laymon@tetrattech.com</p>	<p>VP Elect - SAGEEP James LoCoco Mount Sopris Instrument Co. jim.lococo@mountsopris.com</p>	<p>At-Large Member Brent L. Rosenblad University of Missouri rosenbladb@missouri.edu</p>	<p>International Board Liaison Micki Allen Marac Enterprises mickiallen@marac.com</p>
<p>President Elect Moe Momayez University of Arizona moe.momayez@arizona.edu</p>	<p>At-Large Member Paul Bauman WorleyParsons paul.bauman@worleyparsons.com</p>	<p>At-Large Member Lee D. Slater Rutgers University-Newark lslater@rutgers.edu</p>	<p>SAGEEP 2014 General Chair Jutta Hager Hager GeoScience, Inc. jhager@hagergeoscience.com</p>
<p>VP - Committees Fred Day-Lewis U.S. Geological Survey daylewis@usgs.gov</p>	<p>At-Large Member Bradley Carr University of Wyoming polobc27@gmail.com</p>	<p><i>FastTIMES</i> Editor Barry J. Allred USDA-ARS allred.13@osu.edu</p>	<p>SAGEEP 2014 Technical Chair Mario Carnevale Hager GeoScience, Inc. mcarnevale@hagergeoscience.com</p>
<p>VP Elect - Committees Bethany L. Burton USGS blburton@usgs.gov</p>	<p>At-Large Member Bart Hoekstra Geometrics Inc. Bart@geometrics.com</p>		

## STANDING COMMITTEES

<p><i>FastTIMES</i> Editorial Board Chair Barry J. Allred USDA-ARS allred.13@osu.edu</p>	<p>Nominations Committee Chair Douglas E. Laymon Tetra Tech doug.laymon@tetrattech.com</p>	<p>ECA Committees Chair Jonathan E. Nyquist Temple Univ. nyq@temple.edu</p>	<p>Micki Allen Marac Enterprises</p>
<p>Finance Committee Chair Moe Momayez University of Arizona moe.momayez@arizona.edu</p>	<p>Intersociety Committee Chair Bruce D. Smith USGS bsmith@usgs.gov</p>	<p>Student Committee Chair Laura Sherrad Kutztown Univ. of Philadelphia sherrad@kutztown.edu</p>	<p>Ted Asch XRI Geophysics</p>
<p>Finance Committee Co-Chair Catherine Skokan Colorado School of Mines cskokan@mines.edu</p>	<p><i>JEEG</i> Editorial Board Chair Janet E. Simms US Army Engineer Research &amp; Development Center janet.e.simms@usace.army.mil</p>	<p>Website Committee Chair Moe Momayez Univ. of Arizona moe.momayez@arizona.edu</p>	<p>Matt Benson Golder Associates</p>
	<p>Membership Committee Chair Ron Kaufmann Spotlight Geophysical Services ron@spotlightgeo.com</p>		<p>Melvyn Best Bemex Consulting International</p>
			<p>Ralf Birken Northeastern University</p>
			<p>Nedra Bonal Sandia National Laboratories</p>
			<p>Christopher Buckman AMEC Environment &amp; Infrastructure</p>
			<p>Alex Buller Hager GeoScience, Inc.</p>
			<p>Bradley Carr WyCEHG - University of Wyoming</p>
			<p>Joseph Coe Temple University</p>
			<p>Mehrez Elwaseif University of Wyoming</p>
			<p>John Foley HDR, Inc.</p>
			<p>Robert Freeland University of Tennessee</p>
			<p>Richard Funk Tetra Tech, Inc.</p>
			<p>Denys Grombacher Stanford University</p>
			<p>Rick Hoover Quality Geosciences Company</p>
			<p>Brian Jones Geophysical Survey Systems, Inc.</p>
			<p>Dean Keiswetter Leidos Holdings, Inc.</p>
			<p>Jack Kick Kick Geoexploration</p>
			<p>Doria Kutrubes Radar Solutions International</p>
			<p>James LoCoco Mount Sopris Instrument Co</p>
			<p>Tate Meehan Texas A&amp;M University</p>
			<p>Jonathan Nyquist Temple University</p>
			<p>Andre Pugin Geological Survey of Canada</p>
			<p>Paras Pujari National Environmental Engineering Research Institute (NEERI)</p>
			<p>Judy Robinson Rutgers University</p>
			<p>Gregory Schultz White River Technologies</p>
			<p>Phil Sirles Olson Engineering, Inc.</p>
			<p>Daryl Tweeton GeoTom, LLC</p>
			<p>Roelof Versteeg Subsurface Insights</p>
			<p>Colin Zelt Rice University</p>

## SAGEEP 2014 PLANNING AND ORGANIZING COMMITTEE

<p>SAGEEP 2014 General Chair Jutta Hager Hager GeoScience, Inc. jhager@hagergeoscience.com</p>	<p>Exhibits/Corporate Sponsorships Outdoor Demonstrations Micki Allen Marac Enterprises Inc. mickiallen@marac.com</p>	<p>EEGS Managing Director Jackie Jacoby EEGS Staff jjacoby@wmrdenver.com</p>
<p>SAGEEP 2014 Technical Chair Mario Carnevale Hager GeoScience, Inc. mcarnevale@hagergeoscience.com</p>	<p>Awards Douglas E. Laymon Tetra Tech doug.laymon@tetrattech.com</p>	<p>Student Staff Coordinator Jaycey File EEGS Staff jcfile@wmrdenver.com</p>
<p>VP Elect - SAGEEP James LoCoco Mount Sopris Instrument Co. jim.lococo@mountsopris.com</p>	<p>Student Event Stephen Hilfiker Boston College hilfiker@bc.edu</p>	
<p>Government Sponsors/ Short Courses William E. Doll Battelle dollw@battelle.org</p>	<p>Proceedings Jeannie Norton Battelle nortonj@battelle.org</p>	

## SAGEEP 2014 SESSION CHAIRS/CO-CHAIRS

Micki Allen	Marac Enterprises
Ted Asch	XRI Geophysics
Matt Benson	Golder Associates
Melvyn Best	Bemex Consulting International
Ralf Birken	Northeastern University
Nedra Bonal	Sandia National Laboratories
Christopher Buckman	AMEC Environment & Infrastructure
Alex Buller	Hager GeoScience, Inc.
Bradley Carr	WyCEHG - University of Wyoming
Joseph Coe	Temple University
Mehrez Elwaseif	University of Wyoming
John Foley	HDR, Inc.
Robert Freeland	University of Tennessee
Richard Funk	Tetra Tech, Inc.
Denys Grombacher	Stanford University
Rick Hoover	Quality Geosciences Company
Brian Jones	Geophysical Survey Systems, Inc.
Dean Keiswetter	Leidos Holdings, Inc.
Jack Kick	Kick Geoexploration
Doria Kutrubes	Radar Solutions International
James LoCoco	Mount Sopris Instrument Co
Tate Meehan	Texas A&M University
Jonathan Nyquist	Temple University
Andre Pugin	Geological Survey of Canada
Paras Pujari	National Environmental Engineering Research Institute (NEERI)
Judy Robinson	Rutgers University
Gregory Schultz	White River Technologies
Phil Sirles	Olson Engineering, Inc.
Daryl Tweeton	GeoTom, LLC
Roelof Versteeg	Subsurface Insights
Colin Zelt	Rice University

# BOSTON, MASSACHUSETTS



## Esteemed Colleague,

I am very pleased to invite you to the 27th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) at the Boston Marriott Copley Place Hotel in Boston, Massachusetts. It has been 20 years since SAGEEP last met in Boston. It is very exciting for us to welcome everyone back to Boston, especially those of us who were involved with planning the meeting here in 1994.

The conference will formally open on Sunday afternoon with the Ice Breaker. On Monday morning, Keynote Speaker, Bill Eustes, Associate Professor in Petroleum Engineering and Distinguished Lecturer at the Colorado School of Mines, will speak on the subsurface exploration on Mars. Bill's talk will focus on drilling below the Martian surface, as well as the geophysical exploration scheduled to start in 2016. The Keynote Session will be followed by a Special Session containing the papers awarded "Best of 2013 EAGE/NSGD."

The technical program, put together most capably by Mario Carnevale, will feature over 200 oral and poster presentations from Monday through Wednesday afternoon, with topics ranging from A (Agricultural Geophysics) to U (UXO). Posters will be set up adjacent to the Exhibit Hall, with some expanded coffee breaks to allow more interaction with poster presenters. In addition, short poster summaries for each day's poster session will begin the Tuesday and Wednesday programs before the start of the oral presentations.

Bill Doll, Short Course Chair, has assembled an impressive array of courses on a variety of topics. Sunday, March 16th, will showcase courses on Google Earth and Induced Polarization Applications. Thursday will have MASW Fundamentals Plus and Utility Locating Technologies Overview.

Other SAGEEP activities will include a Sunday North Shore field trip, a Monday afternoon Outdoor Demonstration, Monday evening Student Event, and Tuesday evening special Conference Dinner event set up by our Exhibits Organizer Micki Allen.

Tuesday and Wednesday will include exciting luncheon presentations by two eminent geophysicists working in New England. On Tuesday, Professor John Ebel from Boston College will present a talk summarizing the history of Boston's expanded fill area and focusing on the soil amplification and liquefaction potential in the area. On Wednesday, Dr. Steven Arcone will discuss his ground penetrating radar investigation of the sub-bottom sediment and bedrock characteristics of Mirror Lake in Woodstock, New Hampshire.

Boston is an eminently walkable city that can best be explored on foot or with public transportation. If time and inclination permit, you will find innumerable non-geophysical activities in and around Boston, ranging from intellectually stimulating arts and science to those designed to satisfy your palate. You can attend concerts or plays, or visit one or more of our museums (Fine Arts, Isabella Stuart Gardner, ICA art museums and Museum of Science). Students of early American history can visit the National Park Service's Minute Man National Park in Lexington and Concord, site of the "shot heard round the world."

Sample food from around the world and enjoy the atmosphere to go with it. The Faneuil Hall/Quincy Market area is a good place to start grazing, perhaps followed by a visit to the Black Rose Irish pub and a stop for ricotta pie from Mike's Pastry in the Italian North End.

Come and enjoy the conference and all that Boston has to offer. We look forward to having you join us here, in Boston.

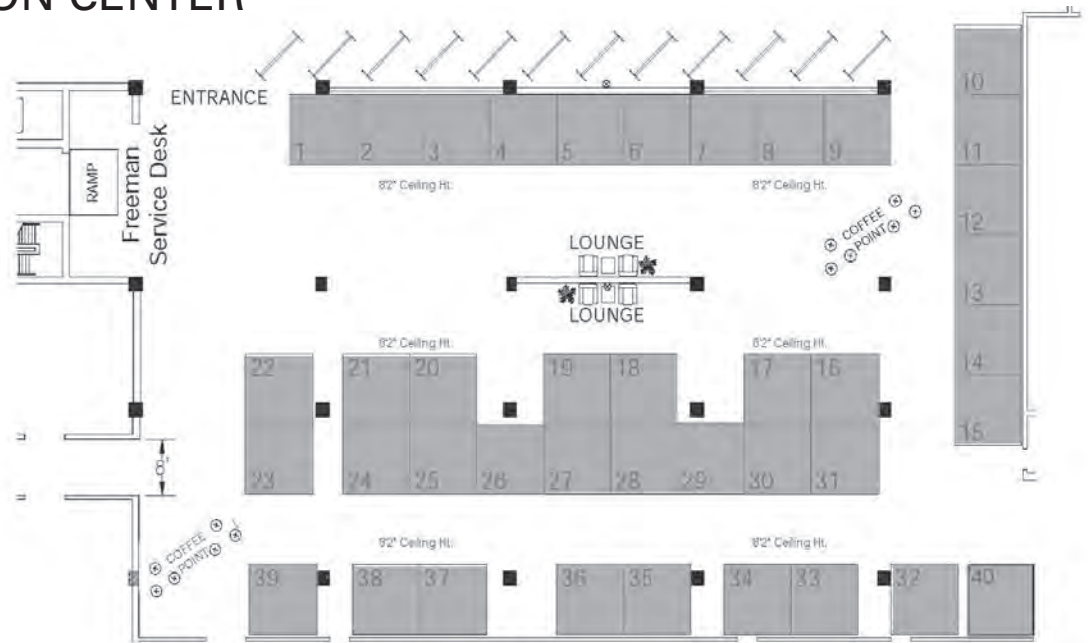
Jutta Hager, SAGEEP 2014 General Chair  
Boston, Massachusetts

WELCOME

WELCOME 2014

# EXHIBITORS FLOOR PLAN

## EXHIBIT HALL - BACK BAY CONFERENCE AND EXHIBITION CENTER



## 2014 SAGEEP EXHIBITORS LIST

COMPANY	BOOTH #	COMPANY	BOOTH #
Advanced Geosciences, Inc.	1	GF Instruments	17
Australian Society of Exploration Geophysicists	Display in Exhibit Hall Foyer	GISCO, Inc.	40
Battelle	35	GSSI	5
CGG	2	Hager GeoScience, Inc.	6
DECO Geophysical Software Company	7	IDS North America, Ltd.	28
DMT GmbH & Co. KG	21	Intelligent Resources Inc.	34
DW Consulting	30	Interpex Limited	23
EAGE NSD	15	IRIS Instruments	11
Environmental Equipment & Supply	33	MALÅ Geoscience USA, Inc.	20
Exploration Instruments, LLC	3	Mount Sopris Instrument Co., Inc.	22
GEM Advanced Magnetometers	13	NDT Corporation	29
Geogiga Technology Corporation	9	Olson Engineering, Inc.	10
Geomar Software Inc.	14	PetRos EiKon Incorporated	32
Geometrics, Inc.	19	Pro-Seismic Services, LLC	37
Geonics Limited	12	RT Clark Co., Inc.	8
Geophex, Ltd.	31	Seismic Source Company	27
Geoscientists <i>Without Borders</i> ®	25	Seistronix, LLC	36
Geosoft, Inc.	18	Sensors & Software Inc.	16
Geostuff, Inc.	39	Society of Exploration Geophysicists	24
		Terraplus, Inc.	26
		Vista Clara, Inc.	4
		Zonge International, Inc.	38

# MEETING ROOMS FLOOR PLAN

## Exhibition Hall Schedule

### Sunday, March 16

5:30 pm – 7:30 pm Ice Breaker

### Monday, March 17

10:20 am Exhibit Hall Opens

10:20 am – 10:40 am Coffee Break

3:20 pm – 3:40 pm Coffee Break

3:41 pm Exhibit Hall Closes

### Tuesday, March 18

10:00 am Exhibit Hall Opens

10:00 am – 10:40 am Coffee Break

3:40 pm – 4:00 pm Coffee Break

5:30 pm Exhibit Hall Closes

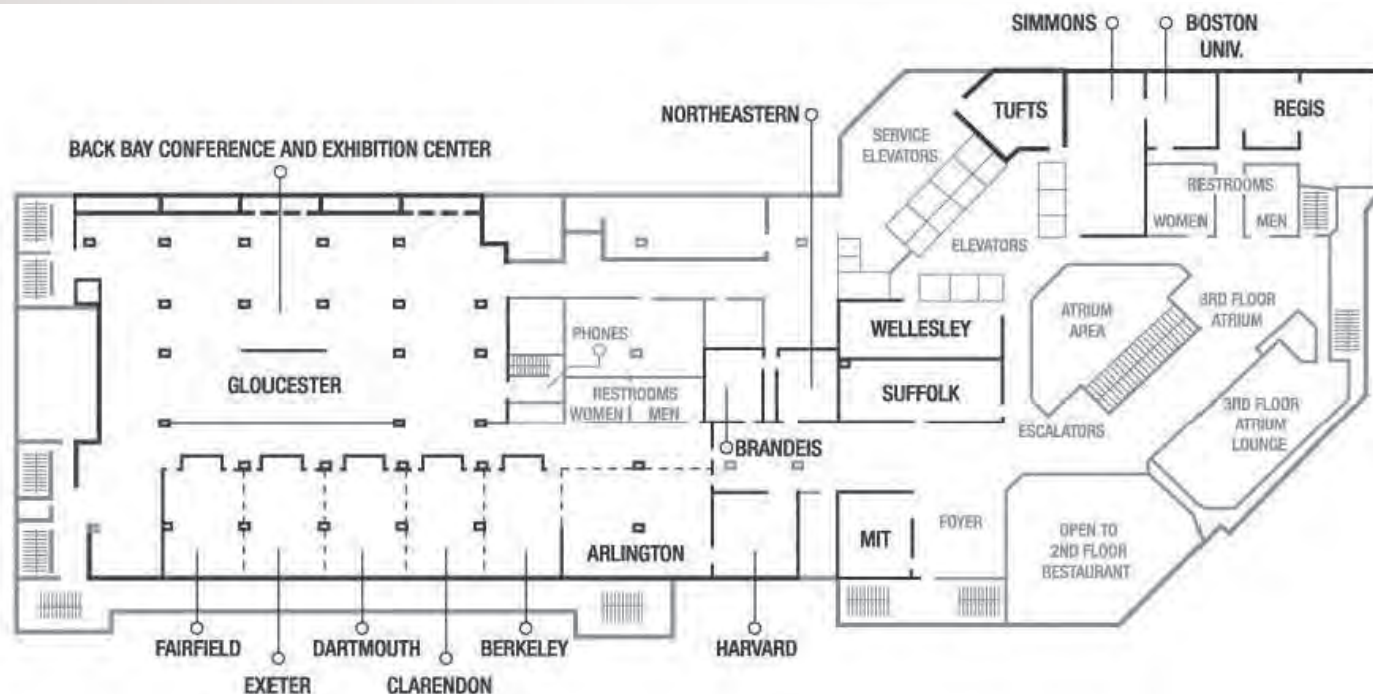
### Wednesday, March 19

10:00 am Exhibit Hall Opens

10:00 am – 10:40 am Coffee Break

3:40 pm – 4:00 pm Coffee Break

4:01 pm Exhibit Hall Closes



## SPECIAL SESSION: Monday, March 17 Best of Near Surface 2013 - Bochum

Four papers from the 18th European Meeting of the Near Surface Division of the EAGE held in Bochum, Germany are being presented at SAGEEP 2014 as part of an exchange, instituted several years ago between EEGS and NSGD/EAGE to strengthen the bond between the two organizations and promote the sharing of innovative applications of environmental and engineering geophysics across the Atlantic. Four "Best Papers," selected from the 2013 SAGEEP Symposium in Denver, Colorado, were presented at the September, 2013 NSGD Conference in Bochum. Four papers from SAGEEP 2014 in Boston will be presented at the NSGD Meeting in Athens, Greece in September. Plan to attend the presentations from Bochum and welcome the authors to Boston:

**The Salinity Dependence of Spectral Induced Polarization Studied with an Extended Model of Membrane Polarization**, Andreas Hördt, TU Braunschweig; Matthias Bucker, University of Bonn

**Quick-clay Landslides in Sweden: Insights from Shear-wave Reflection Seismics and Geotechnical Integration**, Charlotte Krawczyk, Leibniz Institute for Applied Geophysics

**Global Joint Inversion of Tomographic Data: Appraisal of Model Reconstruction Ambiguity**, Hendrik Paasche, Helmholtz-Centre for Environmental Research-UFZ; Jens Tronicke, University of Potsdam

**Surface NMR in Urban Areas-A No Go?**, Mike Müller-Petke, Leibniz Institute for Applied Geophysics

## POSTER PRESENTATION FORMAT 2014

Posters form a significant and important part of the Technical Program for SAGEEP 2014, and we are excited to provide a poster presentation format designed to give posters maximum visibility and impact! Please note that all presentations will be included in the SAGEEP Best Paper Evaluation process.

Posters will be divided into two sessions: Tuesday and Wednesday. Each poster will be identified with a poster board position and title on the list in the poster viewing area.

Posters will be available from 8:00 am on the morning of the day of the poster session, and left up through 6:00 pm that day. Presenters will be available at their posters during the coffee breaks. A form will be provided that specifies other times of the day when presenters will be available at their posters.

In addition, poster presenters will be giving 3-minute oral summaries between 7:40 and 8:20 am both mornings in Simmons (technical session room). Consult the Technical Program for the listings of the poster titles.

# GOVERNMENT SPONSORS & SUPPORTERS 2014

EEGS is grateful to the following government agencies that have agreed to sponsor or support SAGEEP 2014, and the individuals within these organizations (cited below) who helped to secure the commitment. Their financial support ensures that SAGEEP will continue to maintain a high standard of quality and ultimately makes EEGS a stronger organization.



## ARMY RESEARCH OFFICE

The primary mission of the ARL Army Research Office is to serve as the Army's premier extramural basic research agency, funding basic research at universities in the engineering, physical, information and life sciences; developing and exploiting innovative advances to ensure the Nation's technological superiority.

Contact: Dr. David M. Stepp

Email: david.m.stepp.civ@mail.mil

Website: [www.arl.army.mil](http://www.arl.army.mil)



## BUREAU OF RECLAMATION

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation's Technical Service Center (TSC) provides scientific, research, and engineering services related to water resource management and development.

Contact: Mr. Rich Markiewicz

Email: [rmarkiewicz@usbr.gov](mailto:rmarkiewicz@usbr.gov)

Website: [www.usbr.gov/pmts/tech\\_services](http://www.usbr.gov/pmts/tech_services)

# CORPORATE SPONSORS

## SAGEEP 2014 CORPORATE SPONSORS

We thank the following companies for their support through sponsorship of functions and commemorative items.



Advanced Geosciences Inc.

Conference Evening Wine Sponsor



CGG

Sunday Ice Breaker  
Monday Coffee Break  
Conference Evening  
Dinner Cocktails



EEGS Foundation

Student Event



Falmouth Scientific, Inc.

Half Day Coffee Break



GEM Systems, Inc.

Delegate Bag Sponsor



Geometrics, Inc.

Student Event



GF Instruments

Delegate Bag Sponsor



Interpex Limited

Delegate Bag Sponsor



Mount Sopris Instrument Company, Inc.

Delegate Bag Sponsor



R.T. Clark Companies Inc.

Half Day Coffee Break  
Sunday Ice Breaker



Scintrex

Delegate Bag Sponsor



SEG

Half Day Coffee Break

# CORPORATE MEMBERS & COLLABORATING & COOPERATING SOCIETIES

## EEGS CORPORATE MEMBERS

The following organizations generously support EEGS and its programs through their corporate membership. We wish to extend our gratitude for their continued support.

### Advanced Geosciences, Inc.

Mats Lagmanson  
www.agiusa.com

### Geomatrix Earth Science, Ltd

Christopher Leech  
www.geomatrix.co.uk

### Mount Sopris Instrument Company, Inc.

James LoCoco  
www.mountsopris.com

### Zonge International, Inc.

Norman Carlson  
www.zonge.com

### Allied Associates Geophysical, Ltd. Geometrics, Inc.

Norman Bell  
www.allied-associates.co.uk

Linda Phillips  
www.geometrics.com

### Northwest Geophysics, LLC

Matthew Benson  
www.northwestgeophysics.com

### CGG

Greg Hodges  
www.cgg.com

### Geonics Limited

Simon Boniwell  
www.geonics.com

### PetRos EiKon, Inc.

Ross Groom  
www.petroseikon.com

### Exploration Instruments, LLC

Dennis Mills  
www.expins.com

### GSSI, Inc.

Brian Jones  
www.geophysical.com

### R.T. Clark Companies, Inc.

Chris Miller  
www.rtclark.com

### Geo Solutions Limited, Inc.

Ron Crowson  
www.geosolutionsltd.com

### Geosoft, Inc.

Nicholas Valleau  
www.geosoft.com

### Sensors & Software, Inc.

Steve Cosway  
www.sensoft.ca

### Geogiga Technology Corporation

Vera Li  
www.geogiga.com

### Geostuff

Doug Crice  
www.geostuff.com

### Spotlight Geophysical Services

Ronald Kaufmann  
www.spotlightgeo.com

### Geomar Software, Inc.

Jerzy Pawlowski  
www.geomar.com

### Interpex Limited

Charles Stoyer  
www.interpex.com

### Vista Clara, Inc.

David Walsh  
www.vista-clara.com

## COLLABORATING AND COOPERATING SOCIETIES

EEGS values its relationships with other professional societies that share an interest in geophysics and its environmental and engineering applications. Depending on the agreement, collaborations might include publication arrangements, member discounts, sharing newsletter items, promoting conferences, and co-sponsoring events. During the past year, EEGS has had significant interaction with the following societies:



# OUTDOOR DEMONSTRATIONS

## EXHIBITORS EQUIPMENT OUTDOOR DEMONSTRATIONS

Monday, March 17 | 4:00-6:00 pm

Monday afternoon, the Exhibitors Equipment Outdoor Demonstrations will be conducted in front of the historic Trinity Church, located in Copley Square. Wear comfortable shoes as the location is within walking distance of the hotel (signage will direct). The event is free to conference attendees (badge required). Return to the Exhibition Hall after the demonstrations for hot chocolate!

### **Advanced Geosciences, Inc.**

Advanced Geosciences Field demonstration of SuperSting with Wi-Fi® resistivity/IP/SP system with Android App. Advanced Geosciences is the manufacturer of the SuperSting with Wi-Fi® resistivity/IP/SP system. AGI will demonstrate the Android App remote instrument control through WiFi, data transfer, electrode array programming, data email, real time data display with zoom and data inspection and numerous other utilities.

### **GSSI, Inc.**

GSSI will demonstrate our very popular UtilityScan DF (Dual-Frequency). The UtilityScan DF features a 300 and 800 MHz digital antenna, ideal for near surface geophysics. The customized ToughPad G1 monitor displays our 32-bit dual-frequency data simultaneously in split mode or our revolutionary BLEND mode.

### **IDS North America, Ltd.**

RIS MF Hi-Mod is a robust high performance multi-use ground penetrating radar system capable of scanning large areas in a short period of time and providing an accurate 3D view of the subsoil with a high resolution and depth of penetration. RIS MF Hi-Mod provides a complete end-to-end solution from the initial data acquisition in the field to final output production in the form of CAD or GIS maps. RIS MF Hi-Mod's software includes automated tools which reduce the time taken to produce meaningful and unambiguous results.

### **MALÅ Geoscience USA, Inc.**

HDR performance is superior to any conventional GPR technology in the field and is available at a range of frequencies for any GPR investigation and boasts superior depth penetration and bandwidth that mimics a dual frequency antenna. GPR systems like the HDR can accurately locate and determine depths to utilities of many types including pipes, cables, conduit, and duct banks in soils favorable to the GPR method. GPR in many cases is the only practical non-destructive method available to locate non-metallic or non-conductive utilities such as cast iron, PVC or other plastic pipes, concrete, and various composite pipelines. Utilizing electromagnetic radar waves and reflection technology, the HDR systems are non-destructive and safe for users and the environment. All systems are FCC approved.



# SPECIAL EVENTS

## ICE BREAKER

**Sunday, March 16 5:30 – 7:30 pm | Exhibit Hall (Back Bay Exhibition and Conference Center)**

Begin your SAGEEP 2014 experience at the Ice Breaker featuring refreshments and music entertainment.

**Everyone's welcome at the opening SAGEEP event.**

## CAPE ANN FIELD TRIP

**SUNDAY, MARCH 16 | 8:30 am**

If you're visiting the Boston area, this is a tailor-made excursion for those who would like to get a taste of the Boston and surrounding area flavor. The ¾ day outing, beginning at 8:30 a.m. will return in plenty of time to attend the Ice Breaker, SAGEEP's opening event. The day begins with a drive up Boston's North Shore to Rockport, and includes a visit to the granite quarry at Halibut Point State Park. Lunch is on your own at the Cape Ann Brewing Company by the harbor in Gloucester with a tour of the brewery conducted by the brewmaster! On the return trip, you'll stop at the Ryan and Wood Distillery. Meet at the registration area for departure.

## EEGS FOUNDATION SILENT AUCTION

### Adjacent to Registration

Once again, the EEGS Foundation will hold a SILENT AUCTION at SAGEEP. Participate in the auction by bidding on the items on display throughout the conference. Winners will be announced in the Exhibit Hall on Wednesday morning at the mid-morning break. Of course, the EEGS Foundation will gladly accept financial donations throughout the year and welcomes contributions made during SAGEEP.

*The EEGS Foundation was created to support the efforts of EEGS through its outreach programs. Contributors can designate contributions to support the Founders Fund, established to support costs associated with the establishment and maintenance of the EEGS Foundation; the Student Support Endowment, used to support travel and reduced membership fees to attract greater involvement from our student members; or the Corporate Founder's Fund, developed to allow our corporate members to support the establishment of the Foundation as we solicit support from new contributors.*

## STUDENT EVENT

### Kings Boston

**MONDAY, MARCH 17 | 6:00 pm**

The Student Event is open to all registrants and guests. Begin by meeting at 6:00 p.m. at the SAGEEP 2014 registration area. Participants will walk, via the indoor walkway, through the Copley Bridge/Prudential Center to Kings, just outside the shopping complex exit. At Kings Boston there will be pizza, hot hors d'oeuvre selections (beverages on own at bar) and bowling (shoe rental included) for all. Self-described as "upscale, retro-inspired décor and executive-chef designed menus," Kings offers 24,000 sq. feet of bowling, three bars, billiards, skee ball and a shuffleboard table (regulation!). SAGEEP conference badges required and students must wear their student ribbons. No charge for students.

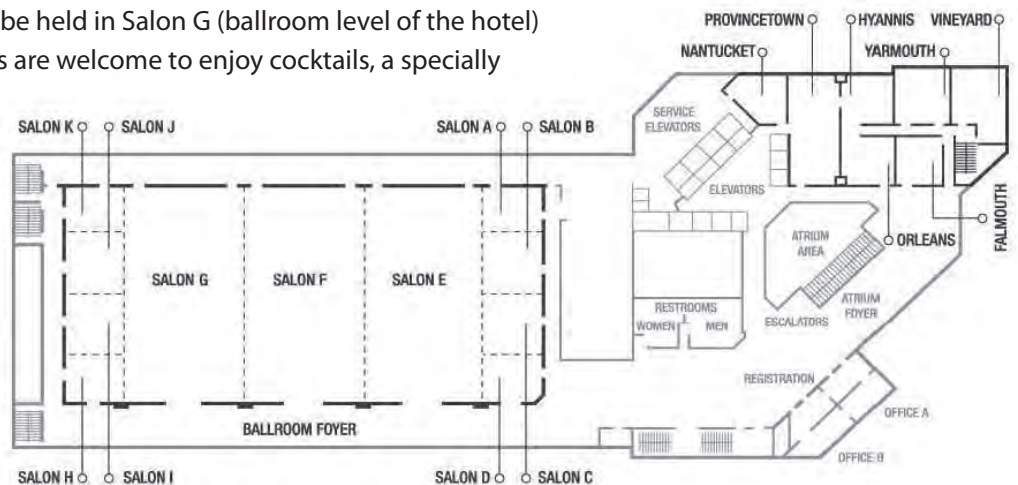
Thanks to our Event Sponsors: Geometrics, Inc., EEGS Foundation.

## CONFERENCE EVENING DINNER EVENT

**Tuesday, March 18 | 6:30 – 11:00 pm**

The Conference Evening dinner will be held in Salon G (ballroom level of the hotel) where SAGEEP attendees and guests are welcome to enjoy cocktails, a specially prepared dinner and wine.

This is THE event where you will enjoy a congenial atmosphere, catch up with friends, make new ones and network with fellow SAGEEP attendees. If you haven't already, be sure to purchase your evening event ticket - space is limited.



## SAGEEP 2014 KEYNOTE SPEAKER

**ALFRED WILLIAM EUSTES III**

**Monday, March 17, 2014 | Salon E**

### **Extraterrestrial Drilling: How on Earth Can Martian Drilling Help Us?**



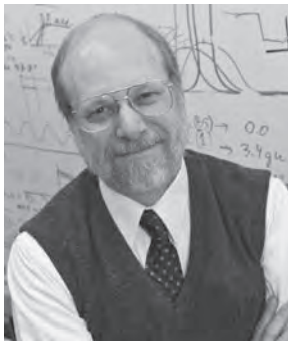
"Are we alone in the Universe? To find that answer will require the use of technology and techniques we use for subsurface exploration. There is one place accessible to mankind that has the strongest possibility to answer that question: Mars. The various Mars missions to date have indicated that there are no organic materials on the surface of the planet; however, as on Earth,

there could be a large biomass under the surface. The tools and techniques developed for Earth subsurface exploration and drilling are the basis for this extraterrestrial subsurface access technology. And what

we learn building and deploying this technology will help us understand how to better explore and drill here on Earth."

There will also be some discussion about the INSIGHT (Interior exploration using Seismic Investigations, Geodesy and Heat Transport) mission, a NASA Discovery Program mission scheduled for 2016 that will place a single geophysical lander on Mars to study its deep interior.

Alfred Eustes, a Colorado School of Mines petroleum engineering professor, has thirty-five years of oilfield experience including nine years with ARCO. He has BS and MS degrees in mechanical engineering and a Petroleum Engineering doctorate from the Colorado School of Mines. He has advised the NSF with Antarctica ice coring and NASA regarding extraterrestrial drilling and is working with industry on unconventional resources and NREL on geothermal drilling.



## SAGEEP LUNCHEON

**JOHN EBEL, BOSTON COLLEGE**

**Tuesday, March 18, 2014 | Salon F**

### **From Earthquake Sources to Site Response: The Seismic Hazard of Boston**

Boston has been affected by several notable earthquakes during historic times, and modern analyses suggest that it lies in an area of moderate seismic hazard. The large areas of soft surface

soils and landfill in Boston and vicinity compound the seismic hazard because these areas may be prone to ground shaking amplification and even ground liquefaction in strong earthquake shaking. Professor Ebel's talk will summarize the artificial filling and earthquake history of Boston

and vicinity, discuss the soil amplification and liquefaction potential in the area, and assess what damage might occur in Boston if a strong earthquake takes place somewhere near the city.

Dr. John E. Ebel is a Professor of Geophysics at Boston College and is a Senior Research Scientist at the Weston Observatory of Boston College. For over 30 years he has monitored earthquakes and studied the earthquake activity of northeastern North America, and in particular in New England. His research expertise includes earthquake sources, seismic wave propagation, seismic hazard analysis, and probabilistic earthquake forecasting, and he has published over 60 technical papers and one book.



## EEGS ANNUAL MEETING/LUNCHEON

**STEVEN ARNONE**

**Wednesday, March 19, 2014 | Salon F**

### **GPR Profiles of GYTTJA, Glaciofluvial Sedimentation and Till**

Mirror Lake in Woodstock, New Hampshire, lies within the Hubbard Brook Experimental Forest, a long-term ecologic and hydrologic research

(LTER) site since 1950. The accumulation of lacustrine sediments has been of interest because they were expected to indicate rates of erosion and vegetative evolution since glacial recession, and the disposition of subbottom till and bedrock because of their potential to act as subbottom hydraulic pathways. The extremely low conductivity of the lake water and sediments made GPR an effective investigation method. The GPR profiles delineate saturated organic-rich mud, glaciofluvial sediments, till, and mainly near-shore bedrock. Structurally, the lake sedimentation is divided by a large glaciofluvial delta extending half way across the

lake and originating from the present stream on the west side. In contrast to earlier studies that assumed bedrock fractures as the main hydraulic pathways beneath the lake, Dr. Arcone interprets up to at least 26 m of till beneath as much as 6 m of glaciofluvial outwash. Profiles recorded in January of 2013 using higher power and lower frequency antennas failed to obtain deeper bedrock returns, but improved delineation of the delta extent.

Steve Arcone obtained his undergraduate degree from Cornell and his graduate degrees from Cornell (MEE) and Dartmouth, (PhD, 1977). His programs focus on radiowave scattering and dispersion, surface wave propagation in rough terrain, glacial and periglacial stratigraphy, and the dielectric properties of sediments. His field research has been mainly in Alaska, Antarctica, and New Hampshire, with support from NSF, NASA, SERDP and the Army 6.1 program.

# GOLD MEDAL CONTRIBUTION AWARD



**JANET E. SIMMS, PhD**

This year's deserving winner of the EEGS Gold Medal Contribution Award is Dr. Janet Simms, a Research Geophysicist with the U.S. Army Engineer Research and Development Center (ERDC) in Vicksburg, Mississippi. Dr. Simms earned her BS from Michigan Technological University, and her PhD from Texas A&M, both in Applied Geophysics. Her primary research efforts have involved the application of geophysics to unexploded ordnance (UXO) problems. These efforts include background characterization of UXO test sites on Aberdeen Proving Ground in Maryland and Yuma Proving Ground in Arizona, developing software to assist UXO site managers with selection of appropriate characterization tools for cleanup efforts, developing software to estimate projectile penetration depth for use in UXO remediation efforts, identifying in near real time the location of UXO on active training ranges using seismic/acoustic sensors, and measuring the geophysical response of non-metallic materials for future munitions. She is currently involved with the development of a prototype sensor for the detection of intermediate electrically conductive materials. She has also been involved in studying the effects of woody vegetation on levees, and the detection of tree roots that can compromise levee integrity. She also enjoys the archeological applications of geophysics, such as work on the U.S.S. Kentucky.

Janet has served ERDC with distinction, evidenced by numerous ERDC awards including Commander's Award for Civilian Service, several Outstanding Team Effort awards, ERDC Achievement Award, and an ERDC Herbert Vogel Award. Her work is published in over 50 technical reports, conference proceedings, and journal articles, including a SAGEEP 2009 "Top 10 Paper," resulting in an invitation to present at the 2009 EAGE Near Surface Conference.

Dr. Simms has supported EEGS and the SAGEEP conference for many years, and has served in a number of key roles within EEGS over that time. She served as the SAGEEP Technical Chair in 2005 for the successful Atlanta symposium, and Vice President of SAGEEP in 2007. She is currently Editor-in-Chief of the EEGS publication *Journal of Environmental and Engineering Geophysics*, a position she has held since 2007. Janet has also served as an officer for the Near Surface Section of SEG between 1996 and 2000, serving as Treasurer, President-elect, and President, and as a member of the Technical Session Committee of SEG in the same timeframe. She is currently Treasurer of the SWE Mississippi River City Section.

*The Gold Medal Contribution Award was established to recognize an individual who is deserving of special recognition due to exceptional contributions made to the engineering and environmental geophysics community and to EEGS. Such contributions include development of educational tools or curriculums, innovation in outreach efforts, or creating communication methods and opportunities with other professional disciplines that comprise potential geophysical end-users.*

# SHORT COURSES

Short courses & workshops include full course notes, continental breakfast, morning & afternoon refreshments & lunch.

## **CANCELLED SC-1: Google Earth Applications in Education and Research**

**Date: Sunday, March 16, 2014**

**Time: 8:00 am – 5:00 pm | Room: Suffolk**

**Instructor: Steven Whitmeyer, James Madison Univ**

Google Earth is used by many geoscientists as a “geo-browser” to study Earth features as revealed by the Google Earth terrain model and imagery. Layers that come with Google Earth highlight features of special interest, but dedicated geoscience content is usually created by a small number of geoscientists who know how to program in KML, the language of virtual globes. This workshop will focus on methods that we have developed to help geoscientists create original content for Google Earth using familiar software such as web browsers, word processors, and image file collections. Case studies will include: (1) Creating digital geologic maps with 3-D symbols, emergent cross sections, etc.; (2) Field data collection with iPads, etc. and integrating field datasets into Google Earth; (3) Optimizing digital geologic map and information for use in the field; and (4) animating surface processes and tectonic motions. Participants will need to bring their own laptops with Google Earth and ActivePerl installed (Mac users already have Perl). If available, participants are also encouraged to bring iPads with the Google Earth and GeoFieldBook apps installed.

## **SC-2: Environmental Applications of the Induced Polarization Method**

**Date: Sunday, March 16, 2014**

**Time: 8:30 am – 4:30 pm | Room: Wellesley**

**Instructor: Lee Slater and Dimitrios Ntarlagiannis, Rutgers-Newark, NJ**

Historically developed as a mineral prospecting method, the induced polarization (IP) geophysical technique has seen a resurgence of interest over the last two decades for environmental and engineering characterization/monitoring. This resurgence has primarily been driven by the recognition of the unique sensitivity of the IP method to pore-surface properties and processes, and the resulting implications for estimation of permeability and monitoring of geochemical or biogeochemical processes. This one-day short course focuses on the developments in this extension of the DC resistivity method in response to the unique opportunities that exist to improve understanding of near surface (upper 100 m) properties and processes beyond that which can be achieved using resistivity measurements alone. The short course will cover: [1] recent theoretical developments and petrophysical relations; [2] practical advice on how to acquire and process meaningful IP data both in the laboratory and the field; [3] IP data processing and inversion strategies; [4] recent case studies in hydrogeophysics and biogeophysics. Recent advances with the spectral induced polarization (SIP) method, whereby IP measurements are made over a wide range of frequencies to provide further information on the physicochemical properties of the subsurface, will also be described.

## **SC-3: Overview of Utility Locating Technologies**

**Date: Thursday, March 20, 2014**

**Time: 8:00 am – 5:00 pm | Room: Suffolk**

**Instructor: Ralf Birken, Northeastern University**

Accurate locating and mapping of subsurface utilities is very important for utility owners, highway managers and engineers, designers, and contractors. The lack of reliable 3D location information can have significant safety and economic consequences. This short course provides an overview of existing utility locating technologies and

methodologies. The focus is on the complementary geophysical methods of electromagnetic induction (EMI) and Ground Penetrating Radar (GPR). The following topics will be explored from a mainly practical point of view: Comparison of geophysical EM methods, fundamentals of EMI and GPR, single-channel versus array systems, survey strategies, importance of accurate positioning information, Dig Safe and similar services, Subsurface Utility Engineering (SUE), cost-benefit analysis, and case histories. Many 3D GPR case histories will be presented for small and large scale locating projects. A special section will explore the locating of deep conductive utilities.

## **SC-4: Multichannel Analysis of Surface Waves (MASW) - Fundamentals Plus**

**Date: Thursday March 20, 2014**

**Time: 8:00 am – 5:00 pm | Room: Wellesley**

**Instructors: Choon Park, Park Seismic LLC, and Mario Carnevale, Hager GeoScience, Inc.**

For about a decade, MASW has become a significant tool for geotechnical site characterization, in which the measurement of shear-wave velocity ( $V_s$ ) plays an important role. During this period, training for and application of the MASW method, particularly in the U.S., has been software-driven. In this course, we will enhance understanding of the MASW method by approaching the fundamental and advanced instructional topics from a conceptual standpoint, i.e., one not driven by software instructions. The  $V_s$  of ground materials is the most valuable among the parameters used in calculating shear and Young's ( $E$ ) moduli used in foundation design. The MASW method offers a cost-effective surface geophysical means of obtaining the  $V_s$  of ground materials that has traditionally been challenging because of the inherent difficulties in generating and recording shear waves with high signal-to-noise ratio (S/N) in borehole surveys. The MASW method calculates  $V_s$  from surface waves, a dominant and easily recorded waveform in all seismic surveys. The multichannel recording and processing approach adopted in the MASW method provides flexibility and robustness in data analysis, further enhancing accuracy of the results. The first part of this course will cover the fundamentals of surface wave data acquisition, analysis, and processing that will allow participants to perform an MASW survey on their own. We will show how MASW offers simple and easily applied procedures that can be used by most geo-professionals after minimal training. Despite the overall simplicity and high success rate of the MASW method, a MASW survey can sometimes produce results that fall below expectations. Although there may be several reasons for this, the cause may simply be due to non-optimal field acquisition geometry, improperly chosen data-processing parameters, or misapplication of the method without acknowledging its limitations. Avoiding these problems will increase the confidence level of MASW survey results for practitioners and clients alike. The objective of the second part of this course is to fully understand the inter-relationship between critical parameters in data acquisition and processing that influence the outcome of MASW surveys. With this information, practitioners will gain more confidence in field operation and data processing, and improve their ability to accurately anticipate the outcome of a planned MASW survey. With successful MASW survey experiences, they will be able to face challenging situations more successfully.

*This course will present several actual case histories that illustrate successful, fair, and below-average MASW survey outcomes; i.e. The Good The Bad and The Ugly. The critical aspects responsible for each outcome will be examined and discussed. Hands-on data collection will also be performed.*

	SIMMONS	WELLESLEY	ARLINGTON	SUFFOLK
	<b>EAGE/NSGD: Best of 2013</b> Chair: Micki Allen			
<b>10:40 – 11:00 am</b>	<b>The Salinity Dependence of Spectral Induced Polarization Studied with an Extended Model of Membrane Polarization</b> Andreas Hördt, TU Braunschweig; Matthias Bücker, University of Bonn			
<b>11:00 – 11:20 am</b>	<b>Quick-clay Landslides in Sweden: Insights from Shear-wave Reflection Seismics and Geotechnical Integration</b> Charlotte Krawczyk, Leibniz Institute for Applied Geophysics			
<b>11:20 – 11:40 am</b>	<b>Global Joint Inversion of Tomographic Data: Appraisal of Model Reconstruction Ambiguity</b> Hendrik Paasche, Helmholtz-Centre for Environmental Research-UFZ; Jens Tronicke, University of Potsdam			
<b>11:40 – 12:00 pm</b>	<b>Surface NMR in Urban Areas-A No Go?</b> Mike Müller-Petke, Institute for Applied Geophysics			
<b>1:40 – 2:00 pm</b>	<b>Ground Penetrating Radar</b> Chair: Brian Jones Co-Chair: Doria Kutrubes	<b>Gravity</b> Chair: Jack Kick	<b>Geophysics in Landfill Analysis</b> Chair: Paras Pujari	<b>General and Unconventional Geophysics</b> Chair: Ted Asch
<b>2:00 – 2:20 pm</b>	<b>Noise Attenuation from 3-D GPR Data Using Artificial Neural Network</b> Sid-Ail Ouadfeul, Algerian Petroleum Institute, AP; Leila Aliouane, Labophyt, FHC, UMBB	<b>Method for Isolation of Gravity Signatures Due to Major Earthquakes from Satellite Gravity Data</b> Rambhatha G. Sastry, Auri Pant, Indian Institute of Technology Roorkee	<b>Geophysical Characterization of Ground-Water Flow and Salt Transport in an Oil-Sand Tailings Pond Dam, Alberta, Canada</b> Aaron Bootenbaugh, University of Calgary; Laurence Bentley, Carl Wendoza, University of Alberta	<b>Using Fibre-Optic Distributed Temperature Sensing (DTS) for Monitoring Sedimentation and Erosion</b> Marco de kleine, Ane Wiersma, Pieter Doornenbal, Deltares
<b>2:20 – 2:40 pm</b>	<b>Improving 3-D GPR Imaging and Lateral Resolution by Inversion with Sparsity Constraints</b> Paolo Mazzucchelli, Aresys	<b>Study of Terrain Corrections with Respect to Digital Elevation Models and Their Effects on Gravity Anomaly Signature Characteristics</b> Ruizhong Jia, Ross Groom, Petros Etikon Inc.	<b>Monitoring of Thermal Induced Deformations of a Landfill Geomembrane Using Ground-based Interferometric Radar</b> Brent Rosenblad, Francisco Gomez, J.E. Loehr, University of Missouri; Wyatt Jenkins, Burns and McDonnell	<b>Results of a Laboratory Study Highlighting the Potential of Integrated P-Wave and Electrical Methods Application in Near-Surface</b> Blial Hassan, Stephen Butt, Charles Hurich, Memorial University
<b>2:40 – 3:00 pm</b>	<b>Dynamic Time Warping of Time-Lapse GPR Data to Monitor Infiltration at the Shale Hills Critical Zone Observatory</b> Jonathan Nyquist, Laura Toran, Lacey Pitman, Temple University; Henry Lin, Penn State University	<b>Potential Field Inversion on Nodes for Stochastic Inversion Models</b> Denis Marroite, Pejman Shamsipour, Michel Chouteau, Ecole Polytechnique de Montreal	<b>Ground-Based Interferometric Radar Measurements of Ground Deformation in a Closed Landfill: An Example near Granby, Colorado</b> Francisco Gomez, Brent Rosenblad, J.E. Loehr, Bjorn Held, University of Missouri; Benjamin Lowry, CCG NPA Satellite Mapping	<b>Efficient Underwater Site Characterization Using a Layered and Integrated Technology Approach</b> John Foley, Derek Jennings, Martin Wiele, HDR Inc.
<b>3:00 – 3:20 pm</b>	<b>Efficient Processing of Long GPR Profiles, with Application to Muskeg Thickness and Bedrock Depth Mapping</b> Alastair McClymont, Landon Woods, Douglas Maclean, WorleyParsons	<b>3-D Stochastic Gravity Inversion on Un-structured Meshes</b> Pejman Shamsipour, Michel Chouteau, Denis Marroite, Ecole Polytechnique de Montreal; Ernst Schreiselar, Natural Resources, Canada	<b>Electrical Leak Testing of Geomembrane-Lined Basins</b> Peter Hutchinson, Maggie Bernd, Bryan Teschke, THG Geophysics	<b>Geophysical Characterization of Pagan Island, Commonwealth of the Northern Mariana Islands (CNMI)</b> Ted Asch, Jared Abraham, XRI Geophysics LLC; Shelle Rose, Remote Sensing & Fluorescence Lab ERDC-Alexandria, VA
<b>3:00 – 3:20 pm</b>			<b>Assessment of Groundwater Pollution near an Ash Disposal Site near a Coastal Aquifer in India-Synthesis of Geoelectrical and Hydrochemical Studies</b> Paras Pujari, CSIR-NEERI, C Padmakar, Ramya Sanam, Pawan Labhasetwar, NEEERI	



### **Is there a better time to support the earth sciences?**

Recent events have illustrated the importance of the type of work performed by our membership. Clean water, sustainable agriculture, seismic risk assessment, utility location, non-destructive testing are all timely, pertinent, world-wide issues.

### **The EEGS Foundation**

Was formed to further the goals of EEGS and is committed to financially supporting all kinds of efforts: conferences and workshops; individual travel grants and scholarships; information dissemination; and research/publication activities.

### **At this SAGEEP meeting**

Stop by the EEGS Foundation Silent Auction table near the SAGEEP Registration area and participate in the auction by bidding on the items on display. Winners will be announced in the Exhibit Hall on Wednesday morning at the mid-morning break.

### **We encourage you**

To make a tax-deductible donation to the EEGS Foundation. This may be done by contacting anyone on the EEGS staff or one of the Foundation Board members listed below.

#### **EEGS Foundation Board Members**

Dennis Mills – President	<a href="mailto:dmills@expins.com">dmills@expins.com</a>
John Clark – Secretary	<a href="mailto:jclark@coronares.com">jclark@coronares.com</a>
John Nicholl – Treasurer	<a href="mailto:john_nicholl@urs.com">john_nicholl@urs.com</a>
William Doll – Member	<a href="mailto:dollw@battelle.org">dollw@battelle.org</a>
Doug Laymon – Member	<a href="mailto:doug.laymon@tetrattech.com">doug.laymon@tetrattech.com</a>
Mark Dunscomb – Member	<a href="mailto:markd@schnabel-eng.com">markd@schnabel-eng.com</a>
Bill Barkhouse – Advisory Board	<a href="mailto:bill.barkhouse@gmail.com">bill.barkhouse@gmail.com</a>
Mel Best – Advisory Board	<a href="mailto:best@islandnet.com">best@islandnet.com</a>

	<b>SIMMONS</b> Airborne Geophysics & Remote Sensing Chair: John Foley	<b>WELLESLEY</b> Electromagnetics Chair: Alex Buller	<b>ARLINGTON</b> Borehole Geophysics Chair: James LoCoco Co-Chair: Daryl Tweeton	<b>SUFFOLK</b> Infrastructure Chair: Joseph Coe
<b>8:20 – 8:40 am</b>	<b>Quantitative Depth to Bedrock Extraction from AEM Data</b> Helgard Anschuetz, NGI; Andi Pfaffhuber, Norwegian Geotechnical Institute; Craig Christensen, Queens University	<b>Urban Soil Exploration Using Electromagnetic Induction and Ground Penetrating Radar</b> Ellen Van De Vijver, Marc Van Meirvenne, Piet Seuntings, Ghent University	<b>Advanced Downhole Microseismic Imaging Methods for Monitoring Hydraulic Fracturing of Shale Gas Reservoirs</b> Haijing Zhang, Wantai-MST Microseismic Lab, Yukuan Chen, University of Science and Technology of China	<b>Safety Evaluation of Dams Using Integrated Geophysical Method: A Case Study in Washington State</b> Koichi Hayashi, Geometrics; Recep Kadir, Timothy Walsh, WA State Dept of Natural Resources; Jerald LaVasser, WA State Dept of Ecology
<b>8:40 – 9:00 am</b>	<b>Methods Used for Locating Legacy Wells in Developing Shale Gas Regions of Western Pennsylvania</b> Garret Veloski, James Sams, Richard Hammack, Rodney Diehl, US Department of Energy	<b>Paleo-ice Flow Direction Determined From Electromagnetic Resistivity Anisotropy</b> Adrian Hickin, British Columbia Geological Survey; Melvyn Best, Bemex Consulting International	<b>Nuclear Magnetic Resonance Logging—Lessons Learned at the Massachusetts Military Reservation, Cape Cod, Massachusetts</b> Carole Johnson, Jason Sorenson, Denis R. LeBlanc, John Lane, US Geological Survey	<b>Enhancement of SRT and ERT Interpretations Using Time-Lapse Measurements and Cross-Plot Analysis</b> Leti Wodajlo, Chung Song, Univ of Mississippi; Craig Hickey, Nat'l Center for Physical Acoustics; Gregory Hanson, USDA-ARS, Hydraulic Engineering Research Unit (HERU), retired
<b>9:00 – 9:20 am</b>	<b>Quantifying Monthly to Decadal Subsidence Rates and Magnitudes near the Wink Sinkholes, West Texas, Using Airborne Lidar and Radar Interferometry</b> Jeffrey Paine, John Andrews, Univ of Texas at Austin; Kutalimis Saylam, Aaron Averett, Tiffany Caudle, Edward Collins, Bureau of Economic Geology; Doohul Yang, Korea Aerospace Research Institute	<b>Removing Standing Water From SNMR Datasets: an Example from an Infiltration Experiment at the South Aura Valley Storage and Recovery Project, Tucson, AZ</b> Samuel Falzone, Kristina Keating, Rutgers-Newark; Elliot Grunewald, Dave Walsh, Vista-Clara, Inc.	<b>The Application of Monte Carlo Simulation to Borehole Gamma-Gamma Density and Spectral Gamma Calibrations</b> John Stowell, Lia Martinez, Mount Sopris Instrument Company	<b>Geophysics as a Tool for Pipeline Design in Challenging Terrain</b> Landon Woods, WorleyParsons Canada
<b>9:20 – 9:40 am</b>	<b>AEM Mapping of Groundwater Resources within the Glacial Deposits and Cretaceous Dakota Formation of Eastern Nebraska</b> Jared Abraham, XRI Geophysics LLC; Clint Carney, James Cannia, Exploration Resources International	<b>Use of Time-Domain Electromagnetics and Passive Seismic Methods to Characterize the Subsurface in East Falmouth, Massachusetts</b> Carole Johnson, Eric White, Denis R. LeBlanc, Sarah L. Morton, John Lane, US Geological Survey	<b>Observations from Borehole Dilution Logging Experiments in Fractured Crystalline Rock Under Variable Hydraulic Conditions</b> Phillip Harte, Alton Anderson, John Williams, US Geological Survey	<b>Application of Electrical Resistivity Imaging to Evaluate the Geometry of Unknown Bridge Foundations</b> Behnoud Kerami, Pennsylvania State Univ.; Joseph Coe, Jonathan Nyquist, Lorraine Sybrandy, Temple Univ.; Peter Berg, Sarah McInnes, Pennsylvania Dept of Transportation
<b>9:40 – 10:00 am</b>	<b>Defining Brine-Plume Geometry through Airborne Electromagnetics, MCMC Inversion, and Resistivity Threshold Probability Mapping</b> Lyndsay Ball, Paul Bedrosian, Burke Minsley, Bruce Smith, Kenneth Watts, US Geological Survey	<b>Validating NMR Derived Effective and Total Porosities for Groundwater-Resource Evaluation in Near-Surface (&lt;100 m) Sediments</b> Kok Plang Tan; Ken Lawrie, Ross S. Brodie, Geoscience Australia; Jared Abraham, XRI Geophysics	<b>Interpretation of Seismic Tomography Results Using Data Quality and Residual Error Maps</b> Sonia Mackens, Thomas Fechner, Wendy Albers, Lutz Karl, Geotomografie GmbH; Daryl Tweeton, GeoTom	<b>Sub-slab Characterization of Gavins Point Spillway with Ground Penetrating Radar Mapping</b> Gregory Beyer, ARCADIS US; Richard Grabowski, USACE, Geotechnical Engineering and Sciences Branch Military Munitions Remediation Section
<b>10:40 – 11:00 am</b>	<b>Mapping Groundwater Recharge Zones &amp; Lithology within a Mountainous Headwater Catchment Area of the Snowy Range</b> Near Laramie, WY with Airborne Electromagnetic and Magnetic Data Bradley Carr, Ryan Armstrong, W. Steven Holbrook, Univ of Wyoming; Jesper Pedersen, Esben Auken, Hydrogeophysics Gr. - Aarhus Univ	<b>Investigations of Different Survey Techniques for Detecting Water-Bearing Structures with TEM</b> Ruizhong Jia, Ross Groom, Petros Eikou Inc.; Wei Yang, 203 Research Institute of CNCC	<b>Borehole Surveys for Determining Depth of Sheet Piles: Non-Optimal Geometry</b> Mario Carnevale, Hager GeoScience, Inc.	<b>An Investigation of Lake Okhissa Dam</b> Corey Hamil, Leti Wodajlo, Chung Song, Chase Cromwell, Univ. of Mississippi; Craig Hickey, National Center for Physical Acoustics, Department of Geology and Geological Engineering
<b>11:00 – 11:20 am</b>	<b>Digital Aerial Characterization of Karst</b> Michael Byle, Thomas Loecherbach, Jared MacLachlan, Tetra Tech, Inc.	<b>ROV-Based Electromagnetic Sensing of Seafloor Targets</b> Gregory Schultz, Joe Keranen, White River Technologies	<b>A New Generation Borehole Acoustic Televiewer Logging Tool</b> James LoCoco, Mount Sopris Instrument Company	<b>Installation and Early Performance of a Seepage Surveillance System at the Mactaquac Dam, New Brunswick</b> Karl Butler, Andrew Ringier, Kerry MacQuarrie, Neema Shija, Bruce Colpitts, Univ of New Brunswick; Bruce McLean, NB Power Generation
<b>11:20 – 11:40 am</b>	<b>High Dipole TDEM Systems</b> Kurt Sorensen, Institute of Geoscience	<b>Equipment of Radial-Frequency Sounding and Electromagnetic Profiling</b> Svyatoslav Khalatov, Novosibirsk State Univ.; Evgeni Balkov, Institute of Petroleum-Gas Geology & Geophysics of the Siberian Branch of the Russian Academy of Sciences		

**POSTER SESSION 1 – EXHIBIT HALL FOYER**  
**Open 8:00 am – 6:00 pm Tuesday March 18, 2014**

**POSTER SUMMARIES 7:40 am – 8:20 am Simmons Room**

1. **Including Measurements along Vertical Ray Paths in Cross-hole Radar Tomography**  
 Celia Boyden, Frederick Day-Lewis, John Lane, US Geological Survey
2. **2D Ground Penetrating Radar Data Filtering Using the Radial Basis Function**  
 Leila Aliouane, LABOPHYT, FHC, UMBB; Sid-Ali Ouadfeul, Algerian Petroleum Institute, IAP; Amar Boudella, Geophysics, FSTGAT, USTHB
3. **LNAPL Migration Study Using GPR and EM-61, Southeastern Massachusetts Site**  
 Doria Kutrubes, Amy Ziter, Radar Solutions International
4. **Mapping Phanerozoic Sediments and Deeper in Northeast Iowa Using Airborne Geophysics**  
 Benjamin Bloss, Paul Bedrosian, Mason Kass, Benjamin Drenth, US Geological Survey; Robert McKay, Iowa DNR
5. **Results from an Airborne Magnetic Study for Locating Legacy Wells in Developing Shale Gas Regions of Southwestern Pennsylvania**  
 James Sams, Garret Veloski, Richard Hammack, Rodney Diehl, US Department of Energy
6. **Application of Geophysical Tools for Environmental and Engineering-Related Problems**  
 Aleksandra Varnavina, Aleksey Khamzin, Evgeniy Torgashov, Neil Anderson, Missouri S&T
7. **A Summary of Near-Surface Geophysical Surveys around Kitimat, British Columbia**  
 Christian Sampaleanu, Golder Associates
8. **Electrical and Gravity Mapping of a Sinkhole in State College, PA**  
 Peter Hutchinson, Heather Krivos, THG Geophysics
9. **Capacitive Resistivity- First Field Measurements on the Zugspitze (German/Austrian Alps)**  
 Andreas Hördt, Anita Przyklenk, TU Braunschweig
10. **Too Thin to Be Detected: When ERT Surveys Can Fail to Assess an Aquiclude Layer Interposed between Two Aquifers: The Suncevi Test Site (Honduras)**  
 Patrizio Torrese, Dipartimento di Scienze della Terra e dell'Ambiente, Università di Pavia; Mario Luigi Rainone, Patrizio Signanini, Ce.R.S.-GEO Università "G. d'Annunzio" Chieti-Pescara; Fabio Colantonio, Università di Chieti-Pescara
11. **3D ERT Imaging of the Fractured-karst Aquifer underlying the Experimental Site of Poitiers (France): Comparing Wenner, Schlumberger, Pole-Dipole and Hybrid Arrays**  
 Patrizio Torrese, Dipartimento di Scienze della Terra e dell'Ambiente, Università di Pavia; Mario Luigi Rainone, Patrizio Signanini Ce.R.S.-GEO Università "G. d'Annunzio" Chieti-Pescara; Pasquale Greco, Fabio Colantonio, Università di Chieti-Pescara; Gilles Porel, Benoît Nauléau, Denis Paquet, CNRS IC2MP UMR Université de Poitiers; Jean-Luc Mari, Institut Français du Pétrole Energies Nouvelles (IFPEN)
12. **Non-destructive Evaluation of Bridge Decks Using Ground Penetrating Radar**  
 Aleksandra Varnavina, Aleksey Khamzin, Evgeniy Torgashov, Brandon Goodwin, Lesley Sneed, Neil Anderson, Missouri S&T
13. **An Integrated Approach for Bedrock Characterization and Mapping Groundwater Preferential Pathways**  
 Andri Dahlmeier, Christopher Buckman, AMEC Environment & Infrastructure
14. **In-situ Assessment of Bridge Decks and Pavements Using Ultrasonic Acoustic Methods**  
 Mengxing Li, Evgeniy Torgashov, Neil Anderson, Stanley Nwokebuibe, Missouri S&T
15. **Seepage Investigations at Martis Creek Dam, Truckee, California**  
 Bethany Burton, US Geological Survey
16. **Self Potential Monitoring of a Biogebattery in a Hydrocarbon Contaminated Site**  
 Jeffrey Heenan, Lee Slater, Dimitrios Ntarlagianis, Rutgers University-Newark



	<b>SIMMONS</b>	<b>WELLESLEY</b>	<b>ARLINGTON</b>	<b>SUFFOLK</b>
<b>4:00–4:20 pm</b>	<b>Imaging a Soil Fragipan Using a High Frequency Multi-Channel Analysis of Surface Wave Method</b> Zhiqiu Lu, Craig Hickey, National Center for Physical Acoustics, University of Mississippi; Glenn Wilson, USDA-ARS Nat'l Sedimentation Laboratory	<b>Enhanced Electrode Sequences for 2-D ERT: Forward Modeling and Field Results</b> Dylan Maxwell, Queens University; Rob Luzitano, Golder Associates	<b>Geostatistical Integration of Geophysical Measurements for Hydrogeological Investigations</b> Gabriel Fabien-Quellet, Erwan Gloaguen, INRS ETE	<b>High-Frequency Surface Wave Measurement for the Pavement Structural Analysis</b> Tomio Inazaki, Kunio Aoiike, Public Works Research Institute; Takaho Kita; Koichi Hayashi, Geometrics
<b>4:20–4:40 pm</b>	<b>Use of a Resistance Meter to Monitor Groundwater Impacts near Wastewater Holding Ponds-Multi-Year Summary</b> Roger Eigenberg, Bryan Woodbury, USDA-ARS	<b>Cross-Plot Analysis By Using Rock Physics-Based Thresholds for an Evaluation of Unsaturated Soil</b> Chisato Konishi, OYO Corporation	<b>An Optimized Workflow for Regional Aquifer Characterization in Monerégie, Québec, Canada</b> Erwan Gloaguen, Martin Blouin, INRS ETE	<b>Use of Geophysical Surveys to Assess Slope Failure and Pavement Distress along a Roadway in Missouri</b> Jeremy Strommeyer, Benjamin Petersen, Douglas Lambert, Geotechnology
<b>4:40–5:00 pm</b>	<b>Advancement of Non-Invasive NMR Soil Moisture Scanners</b> Dave Walsh, Elliot Grunewald, Hong Zhang, Vista-Clara, Inc.	<b>Subsurface Characterization for Pipeline River Crossings Using Surface "Water-Coupled" ERT: Comparison with Other Geophysical Methods</b> Alex Buller, Hager GeoScience, Inc.	<b>Excitation Pulse Selection in Magnetic Resonance Sounding</b> Huangjian Wu, Li Zhenyu, China University of Geosciences	<b>Utility and Cost Effectiveness of Using a Combination of Geophysical Techniques to Solve Highway Related Problems</b> Adel Elkrry, Evgeniy Torgashov, Abdallah Dera, Mengxing Li, Aleksey Khamzin, Aleksandra Varnavina, Brandon Goodwin, Ronaldo Luna, Lesley Sneed, Neil Anderson, Missouri S&T
<b>5:00–5:20 pm</b>	<b>Quantifying Wood Moisture Content Using 3-D Ground Penetrating Radar and Electrical Resistivity Tomography</b> Mehrez Elwaseif, W. Steven Holbrook, Brent Ewers, Scott Peckham, James St. Clair, Jordan Hayes, Univ of Wyoming; Thomas Guenther, Leibniz Institute of Applied Geophysics	<b>Comparative Analysis of an Embankment Dam Between Low and High Pool Using Electrical Resistivity Imaging and Spontaneous Potential</b> Kevin Hon, S&ME, Inc.; Jeffrey Munsey, Tennessee Valley Authority		<b>Simulation Analysis for Under-Pavement Drainage Detection by Ground Penetrating Radar (GPR)</b> Hao Bai, Joe Sinfield, Purdue University
<b>5:20–5:40 pm</b>	<b>Imaging Trees Interior Using 3-D Electrical Resistivity Tomography</b> W. Steven Holbrook, Brent Ewers, Scott Peckham, Mehrez Elwaseif, University of Wyoming	<b>Yukon High Resolution Resistivity/IP Mineral Exploration Case Study</b> Isaac Fage, GroundTruth Exploration Inc.; Melvyn Best, Bemex Consulting International		<b>Characterizing Hidden Full Depth Asphalt Patches Using High Speed, Multi-Channel Ground Penetrating Radar</b> Kevin Hon, Jason Cox, S&ME, Inc.
<b>5:40–6:00 pm</b>	<b>Agricultural Geophysical Implications at the Agricultural and Research Station of KFU, Al Hassa, KSA</b> Ahmed El Mahmoudi, Yousef Al-Wolihem, Adel Hussein, King Faisal University			<b>Detailed Characterization of Pavement Surface Structure Using High Resolution GPR</b> Kunio Aoiike, Tomio Inazaki, Public Works Research Institute; Hideki Saito, OYO

	SIMMONS	WELLESLEY	ARLINGTON	SUFFOLK
	<p><b>Airborne Geophysics &amp; Remote Sensing</b> Chair: John Foley</p>	<p><b>Electrical-RES, IP, Self Potential</b> Chair: Roelof Versteeg</p>	<p><b>Hydrogeophysics</b> Chair: Bradley Carr</p>	<p><b>NDE&amp;T for Bridges and Concrete Structures</b> Chair: Ralf Birken</p>
<p><b>11:40 – 12:00 pm</b></p>	<p><b>Two-Dimensional Joint Inversion of ZTEM and MT Plane-Wave EM Data for Near Surface Applications</b> Jean Legault, Geotech Ltd.; Philip Wannamaker</p>		<p><b>Tracer Technologies: Possibilities in the Reservoir Engineering</b>, Leonid Anisimov, LUKOLEngineering</p>	<p><b>Comparing Experimental and Simulated GPR Amplitudes from Rebar in Healthy and Corroded Reinforced Concrete Bridge Decks</b> Nicole Martino, Roger Williams Univ.; Ralf Birken, Northeastern Univ.; Ken Maser, Infraseense, Inc.</p>
<p><b>1:40 – 2:00 pm</b></p>	<p><b>The Importance of Single Transmitted Waveforms in the Characterization of Discrete Conductors</b> Jean Legault, Andrei Bagrianski, Alexander Prikhodko, Geotech, Ltd</p>	<p><b>Monitoring of Joint Systems Time-Lapse Behavior via ERT</b> Jaroslav Jirku, Faculty of Science; Jaroslav Barta, G Impuls Praha</p>	<p><b>Geophysical Flow Analysis of Anisotropy: A Case Study of Snapper Creek Municipal Well Field</b>, Miami, FL Albert Yehoah-Forsen, Missouri Southern State Univ.; Dean Whitman, Florida Int'l Univ</p>	<p><b>Adaptive Approach for Utilization of Ground Penetrating Radar for Bridge Deck Investigations</b> Aleksey Khamzin, Aleksandra Varnavina, Evgeniy Torgashov, Brandon Goodwin, Lesley Sneed, Neil Anderson, Missouri S&amp;T</p>
<p><b>2:00 – 2:20 pm</b></p>	<p><b>Reflection of Winter Road Salinity in P-THEM Data</b> Anton Vetrov, Pico Envirotec, Inc.</p>	<p><b>Geophysical Methods as an Aid to Planning, Monitoring, and Abandoning Tailings Facilities in the Alberta Oil Sands</b> Paul Bauman, Dan Parker, Laurie Pankratow, Kim Hume, WorleyParsons</p>	<p><b>Time-Lapse DC Resistivity Studies of the Hypoethic Zone within Two High Mountain Streams of the Snowy Range</b>, WY Bradley Carr, Robert Hall, WYCEHG-Univ of Wyoming</p>	<p><b>LDV-based MASW Method for Pavements/Concrete Slabs/Bridge Decks</b> NDT: A Preliminary Study Zhiqiu Lu, National Center for Physical Acoustics, University of Mississippi</p>
<p><b>2:20 – 2:40 pm</b></p>	<p><b>Unmanned Aerial Systems for Agricultural Geophysics</b> Robert Freeland, Univ of Tennessee; Barry Allred, USDA/ARS Soil Drainage Research Unit</p>	<p><b>Geophysical Mapping of Brine Springs in the Montezuma Wetlands Complex</b>, NY Dea Musa, Laura Sherrrod, Emily Snyder, Sebastian Treciak, Alex Spielman, Kutztown Univ; Andres Kozlowski, Brian Bird, New York State Museum;</p>	<p><b>Calibrating Surface Hydrology, Self-Potential and Time-lapse DC Resistivity Analyses at an Artesian Spring Near Laramie, WY</b> Bradley Carr, Scott Miller, Eva Marquis; Kevin Hyde, WYCEHG-Univ of Wyoming</p>	<p><b>Comparison of MASW and MSOR for Surface Wave Testing of Pavements</b> Shihbin Lin, Jeremy Ashlock, Iowa State Univ</p>
<p><b>2:40 – 3:00 pm</b></p>	<p><b>A Bayesian MeMC Approach to Model Assessment, Uncertainty Analysis, and Lithological Prediction for Airborne Electromagnetic Surveys</b> Burke Minsley, Paul Bedrosian, V.J.S. Grauch, US Geological Survey</p>	<p><b>One Little Step towards a Resistivity to Rock-Quality Transform</b> Sara Bazin, Andi Pfaffhuber, Guro Grøneng, Norwegian Geotechnical Institute; Craig Christense, Queens Univ</p>	<p><b>Joint inversion of Multi-Configuration Electromagnetic Induction Measurements to Predict Soil Wetting Patterns during Surface Trickle Irrigation</b> Khan Z. Jadoon, Samir K. Al-Mashharawi, Thomas M. Missimer, King Abdullah Univ of Science &amp; Technology; Dawood Moghadas, Federal Institute for Geosciences &amp; Natural Resources; Aurangzeb Jadoon, Department of Earth Sciences Quaid-I-Azam Univ</p>	<p><b>Complementary Pavement Subsurface Assessment Using Mobile Acoustic Surface Sensing and Ground Penetrating Radar Systems</b> Yifeng Lu, Hao Liu, Ming L. Wang, Ralf Birken, Northeastern Univ</p>
<p><b>3:00 – 3:20 pm</b></p>		<p><b>Combining Land and Waterborne Electrical Resistivity Tomography for Improved Infrastructure Planning On Waterways</b> Erin Ernst, WorleyParsons</p>	<p><b>Resolving the Irresolvable through Data Integration for the Transmitter Site, Bucks Harbor, ME</b> Drew Clemens, Geo-Resolution, Inc.; Mike Thompson, MDT Assoc, Steve Miller, GeoSolutions, Inc.</p>	<p><b>Identifying Internal Weaknesses in Concrete Piers with Tomographic Imaging</b> Paul Fisk, NDT Corporation</p>
<p><b>3:20 – 3:40 pm</b></p>		<p><b>3-D Electrical Resistivity Tomography as an Aid for Construction Planning in Expansive Clay</b> Gerardo Cifuentes-Nava, Esteban Hernandez-Quintero, Rene Chavez-Segura, Universidad Nacional Autonoma de Mexico</p>		<p><b>FHWA's Characterization of Bridge Foundations Workshop</b> Frank Jalilnoos, Federal Highway Administration (FHWA)</p>

	SIMMONS	WELLESLEY	ARLINGTON	SUFFOLK
	<b>Munitions Detection Systems and Software</b> Chair: Dean Keiswetter	<b>Seismic Refraction/Reflection</b> Chair: Colin Zeit Co-Chair: Andre Pugin	<b>Advances in Electrical Resistivity Imaging</b> Chair: Judy Robinson	<b>Archaeological Geophysics</b> Chair: Matt Benson Co-Chair: Tate Meehan
<b>8:20 – 8:40 am</b>	<b>The Development of Underwater MEC/UXO Detection Arrays, Magnetic and Electromagnetic</b> Richard Funk, Terra Tech	<b>Combining P-and SH-Wave Traveltime Tomography for Void Detection</b> MD Alam, Priyank Jaiswal, Oklahoma State Univ	<b>2.5-D Resistivity Inversion in Anisotropic Media: A Numerical Experiments</b> Stewart Greenhalgh, ETH Zurich; Tomothy Wiese, Santos; Bing Zhou, Univ of Adelaide; Mark Greenhalgh, Thumping Geophysical; Laurent Marescot, Ris Mgmt Services	<b>Reconstructing the Prehistoric Landscape of Stonehenge (UK) through Multi-Receiver EMI Survey</b> Philippe De Smedt, Ellen Van De Vijver, Marc Van Weirvenne, Timothy Saey, Ghent Univ
<b>8:40 – 9:00 am</b>	<b>MEC Libraries – Why Are They Vital?</b> Tom Furryya, Dean Keiswetter, Leidos Holdings, Inc.; Darren Mortimer, Geosoft, Inc.	<b>Continuous Data Processing for Comprehensive and Effective Reflection Seismic Survey</b> Erwan Gloaguen, Martin Blouin, INRS ETE	<b>Combining Geoelectrical and Advanced Lysimeter Methods to Characterize Heterogeneous Flow and Transport under Unsaturated Transient Conditions</b> Markus Wehrer, Lee Slater, Rutgers Univ-Newark; Andrew Binley, Lancaster Univ	<b>Geophysics as Preservation Archaeology: Mapping Architectural Variability in the Mogollon with Magnetic and Electromagnetic Landscape Surveys</b> Timothy de Smet, Texas A&M Univ; Thatcher Rogers, Univ of Wisconsin-La Crosse; William Sauk, Western Michigan Univ
<b>9:00 – 9:20 am</b>	<b>Advanced Information Management to Facilitate Geophysical Anomaly Classification at Munitions Sites</b> John Foley, Peter Hille, Martin Miele, HDR Inc.	<b>Multi-Component Vibro-Seismic Techniques for Assessing Gas Escape Features, Faults and Landslides</b> Andre Pugin, Susan Pullan, Hunter James, Kevin Brewer, Timothy Cartwright, Heather Crow, Gregory Brooks, Geological Survey of Canada	<b>Challenges and Improvements Using 3-D Borehole Electrical Resistivity Tomography to Characterize Fractures</b> Judy Robinson, Lee Slater, Dimitrios Ntargiannis, Rutgers Univ-Newark; Timothy Johnson, Pacific Northwest Nat'l Laboratory; Frederick Day-Lewis, Thomas Imbriggotta, Carole Johnson, Pierre Lacombe, John Lane, Allen Shapiro, Claire Tiedeman, US Geological Survey	<b>EMI and Magnetic Methods Used at the Visne Angar Archaeological Site, Gotland Island, Sweden</b> William Sauk, Western Michigan Univ; Frederic Pearl, Texas A&M Univ-Galveston
<b>9:20 – 9:40 am</b>	<b>Making the “Decision” for Geophysical Classification of Munitions and Ordnance</b> Darren Mortimer, Geosoft Inc.; Tom Furryya, Dean Keiswetter, Leidos Holdings, Inc.	<b>Optimized Interpretation of SAGEEP 2011 Blind Refraction Data with Fresnel Volume Tomography and Plus-Minus Refraction</b> Siegfried Rohdewald, Intelligent Resources Inc.	<b>Time-Lapse Electrical Resistivity Imaging of Peatland Gas Content Incorporating Induced Polarization Data</b> Neil Terry, Lee Slater, Rutgers Univ-Newark	<b>Archaeological Surveys using Multichannel Ground Penetrating Radar Array Systems</b> Alexandra Novo, IDS North America
<b>9:40 – 10:00 am</b>	<b>A Combined Joint Diagonalization-MUSIC Algorithm for Estimating Locations of Sub-surface Targets</b> Yinlin Wang, John Sigman, Kevin O'Neill, Fridon Shubittidze, Dartmouth College; Benjamin Barrowes, ERDC CRREL	<b>Frequency-Dependent Traveltime Tomography for 2-D and 3-D Near-Surface Seismic Refraction Data</b> Colin Zeit, Jianxiong Chen, Rice University	<b>A New Tool for Void Detection Using Combined MIMR and ERT</b> Douglas LaBrecque, Daniel LaBrecque, Daniel Casale, Russell Brigham, Multi-Phase Technologies, LLC	<b>Flat Rock Community Mapping Project: Geophysical Survey of an Historic African American Cemetery</b> Lain Graham, Jeffrey Glover, Andrew Vaughan, Daniel Bigman, Georgia State Univ
<b>10:40 – 11:00 am</b>	<b>Data Analysis Workflow for UXO Classification</b> Dean Keiswetter, Tom Furryya, Leidos Holdings, Inc.	<b>Application of Frequency-Dependent Traveltime Tomography (FDTT) to 2-D and 3-D Near-Surface Seismic Data at a Shallow Groundwater Contamination Site, Rifle, CO</b> Jianxiong Chen, Colin Zeit, Alan Levander, Rice University	<b>Intelligent Meshing For Geophysical Inverse Problems Using Unstructured Meshes</b> Ting-Kuei Chou, Michel Chouteau, Ecole Polytechnique de Montréal; Jean-Sébastien Dubé, Ecole de Technologie Supérieure	<b>Multi-Sensor Geophysical Fusion for Improved Sub-Surface Imaging at Historic Camptown Cemetery, Brenham, Texas</b> Tate Maehan, Mark Everett, Timothy De Smet, Texas A&M Univ
<b>11:00 – 11:20 am</b>	<b>Munitions Classification Methods Applied to Dynamic EMI Sensor Data</b> Gregory Schults, Joe Keranen, Jonathan Miller, White River Technologies	<b>Application of Frequency-Dependent Traveltime Tomography &amp; Full Waveform Inversion to the Data Used in the Blind Test at the 2011 SAGEEP Meeting</b> Jianxiong Chen, Colin Zeit, Rice Univ; Priyank Jaiswal, Oklahoma State Univ	<b>Large-Scale Distributed 2-D/3-D FDIIP System Based on ZigBee Network and GPS</b> Xuefeng Zhao, Hongchun Yao, Jieting Qiu, Champion Geophysical Technology; Rujun Chen, Central South Univ; Xiaoliu Xi	<b>Imaging Archaeological Remains Using a Fixed-Frequency Multi-Offset Mobile EM Induction Tool</b> Kim Tremaine, John Lopez, Tremaine and Associates, Inc.; Mehrez Elwaseif, Univ of Wyoming
<b>11:20 – 11:40 am</b>	<b>Results of 20mm at Depth</b> Jeffrey Gamey, Battelle; Bruce Barrow, Leidos Holding, Inc.	<b>Surface Wave &amp; Passive Seismology</b> Chair: Christopher Buckman Co-Chair: Melwyn Best		
<b>11:40 – 12:00 pm</b>	<b>Investigating EMI Sensing Phenomena for Subsurface Intermediate Electrically Conducting Targets</b> Fridon Shubittidze, Kevin O'Neill, Dartmouth College; Benjamin Barrowes, ERDC CRREL	<b>Seismic Characterization of Near-Surface Anisotropic Structure</b> Hao Xie, Lanbo Liu, University of Connecticut		

## POSTER SUMMARIES 7:40 am – 8:20 am Simmons Room

SRRLSOD VADSENDEW 4102 PEEGAS

### POSTER SESSION 2 – EXHIBIT HALL FOYER

Open 8:00 am – 6:00 pm Wednesday March 19, 2014

1. **Geoelectric Imaging Scores over MASW in Geotechnical Site Characterization**  
Rambhatla G. Sastry, Sumedha Chahar, IIT Roorkee
2. **Joint Inversion and Interpretation of Seismic Refraction and Resistivity-Time Domain IP Data from the ESS Site at Lund, Sweden**  
Marcus Wennermark, Kristofer Hellman, Torleif Dahlin, Lund University; Thomas Guenther, Leibniz Institute of Applied Geophysics
3. **TSWD - State of the Art and Current Developments**  
Ingrid Kreutzer, Vienna University of Technology
4. **Experimental and Theoretical Studies of the Temperature Dependence of Spectral Induced Polarization (SIP) Based on a Membrane Polarization Model**  
Andreas Hördt, Katharina Bairein, Sven Nordsiek, TU Braunschweig; Matthias Bücker, University of Bonn
5. **Estimation of Van Genuchten-Mualem Parameters and the Saturated Hydraulic Conductivity from SIP Measurements**  
Andreas Hördt, Sven Nordsiek, Efstathios Diamantopoulos, Wolfgang Durner, TU Braunschweig
6. **Geophysical Investigations of a Rural Water Point Installation Program in Nampula Province, Mozambique**  
Farisse Chirindja, Björn Andersson, Tom Björkström, Torleif Dahlin, Lund University; Diniz Juizo, Eduardo Mondlane University
7. **Hydrogeophysical Imaging Constrained by Groundwater Flow Modeling and Laboratory Measurements of Electrical Properties of Undisturbed Soils at Historical Grant-Kohrs Ranch, MT**  
Hugo Bertete Aguirre, Shallow Electromagnetic and Electroresistivity Facility, MontanaTech.; Glenn D. Shaw, Geological Engineering, MontanaTech.
8. **Use of Geophysical Methods and Satellite Imagery for Producing 7.5-Minute Quadrangle Geologic Maps in Washington State**  
Recep Cakir, Joe Dragovich, Timothy Walsh, Meredith Payne, Washington State Department of Natural Resources; Sang-Ho Yun, Jet Propulsion Laboratory; Megan Anderson, Colorado College; Koichi Hayashi, Geometrics
9. **Integrated Approach with Electromagnetic Mapping and Direct-Push in Situ Measurement to Characterize Hydrocarbon-contaminated Ground**  
Yuji Mitsuhashi, National Institute of Advanced Industrial Science and Technology
10. **Geophysical Investigations of Local Cemeteries in Eastern Pennsylvania**  
Emily Snyder, Laura Sherrrod, Sebastien Trecliac, Kutztown University; Carl Peterson
11. **Waveform Inversion of Rayleigh Waves for Shallow Shear-Wave Velocity Using a Conjugate Gradient Method**  
Lingli Gao, Jianghai Xia, Yudi Pan, China University of Geosciences
12. **Ground Penetrating Radar (GPR) Studies at Letoon at Kumluca-Fethiye-Mugla, Turkey**  
Nihan Hoskan, Fethi Ahmet Yuksel, Istanbul University; Kerim AVCI, Geometrik Mühendislik Müsavirlik Yer alti Arastirmalari; Ismail Erguder, TKI Kurumu; Ezel Babayigit, TKI Genel Mudurlügü; Sema Atik Korkmaz, Baskent University
13. **P-P and S-S Ground Roll Comparison**  
Brooke Briand, Priyank Jaiswal, Oklahoma State University
14. **Archeogeophysical (GPR) Studies at the Kazakhstan-Akmola-Ereymantau-Kumay Valley 6th-7th Century Oghuz-Kipchak Kurgans**  
Fethi Ahmet Yuksel, Istanbul University; Ayman Dosimbayeva, Ministry of Information and Culture of the Republic of Kazakhstan; Kerim AVCI, Geometrik Mühendislik Müsavirlik Yer alti Arastirmalari
15. **Archeogeophysical (GPR) Studies at the Turkey-Manisa-Akhisar Thyatira Ancient City Archeological Excavation Site**  
Kerim Avci, Geometrik Mühendislik Müsavirlik Yer alti Arastirmalari; Fethi Ahmet Yuksel, Nihan Hoskan, Istanbul University; Engin Akdeniz, Adnan Menderes University
16. **Geophysical Investigation to Image a Roman-Era Villa**  
Gordon Osterman, Gary Farney, Jon Algeo, Rutgers University; Kimberly Brown, University of the Arts
17. **The GPR Measurements on Hagia Sophia's Surfaces Facing the Naos**  
Sonay Sakar, Republic of Turkey Ministry of Culture and Tourism; Fethi Ahmet Yuksel, Nihan Hoskan, Istanbul University; Emine Avci, Geometrik Engineering Consultancy Subsurface Research; Kerim Avci, Geometrik Mühendislik Müsavirlik Yer alti Arastirmalari; Kubra Erguven; Aslı Karaarslans Özcan, Aslı Architecture
18. **Field Measurement of Magnetic Resonance Tomography Using Elongated Transmitter and In-loop Receiver Arrays (MRTetra)**  
Chuangdong Jiang; Mike Müller-Petke, Leibniz Institute for Applied Geophysics; Jun Lin, Jilin University

	<b>SIMMONS</b>	<b>WELLESLEY</b>	<b>ARLINGTON</b>	<b>SUFFOLK</b>
	<p><b>Live UXO Data Analysis</b> Chair: Gregory Schultz</p>	<p><b>Surface Wave &amp; Passive Seismology</b> Chair: Christopher Buckman Co-Chair: Melvyn Best</p>	<p><b>MNR &amp; Magnetics</b> Chair: Derys Grombacher Co-Chair: Rick Hoover</p>	<p><b>Karst, Tunnels &amp; Other Cavities</b> Chair: Nedra Bonal</p>
4:00 – 4:20 pm	<p><b>Implementation of Quality Control and Data Management for Production Classification Surveys</b> Gregory Schultz, Jonathan Miller, Joe Keranen, Fridon Shubritdze, White River Technologies</p>	<p><b>The Application of Passive Microseismic Imaging for Monitoring Mining Safety</b> Haijiang Zhang, University of Science and Technology of China, Wantai MST Microseismic Lab; Wenfa Yan, Beijing MISEIS Technologies</p>	<p><b>Soil Moisture Profiling With Borehole NMR</b> Pablo Prado, One Resonance Sensors, LLC</p>	<p><b>A Description of an Effective Sinkhole Investigation Approach: A Case Study of a Site in Greene County, Missouri</b> Stanley Nwokeduibe, Evgeniy Torgashov, Neil Anderson, Missouri S&amp;T</p>
4:20 – 4:40 pm	<p><b>An Expert-Free Technique for Live Site UXO Target Classification</b> John Sigman, Yinlin Wang, Kevin O'Neill, Fridon Shubritdze, Dartmouth College; Benjamin Barrowes, ERDC CRREL</p>	<p><b>Use of MASW to Aid in Subsurface Characterization of Karst Conditions Under an Active Railway, Northwest Georgia</b> Christopher Buckman, Larry Sciple, AMEC Environment &amp; Infrastructure</p>	<p><b>Monitoring of Microbial Growth in Porous Media Using Low-Field Nuclear Magnetic Resonance</b> Chi Zhang</p>	<p><b>New Approaches to Void Detection</b> Nedra Bonal, Leiph Preston, Sandia National Laboratories</p>
4:40 – 5:00 pm	<p><b>EMI Data Classification Processing at Operational Munitions Sites</b> Gregory Schultz, Joe Keranen, Jonathan Miller, Fridon Shubritdze, White River Technologies</p>	<p><b>An MASW Survey to Assess Flood Damaged Road – A Case History</b> Koya Suto, Terra Australis Geophisica Pty Ltd; Ross Kristinof, Sinclair Knight Merz</p>	<p><b>Application of Potential Geophysical Fields in Ore Deposits: Inverse Problem Solution under Complex Conditions and 3-D Gravity-Magnetic Field Modeling</b> Lev Eppelbaum, Tel Aviv University</p>	<p><b>A Near-Surface Geophysical Investigation of Sinkhole Formation, Nachusa Grasslands, Northern Illinois</b> Lauren Schroeder, Phillip Carpenter, Northern Illinois Univ</p>
5:00 – 5:20 pm	<p><b>Live Site UXO Dynamic Data Processing Using Advanced EMI Models</b> Fridon Shubritdze, Kevin O'Neill, Dartmouth College; Benjamin Barrowes, ERDC CRREL; Irma Shamatava, White River Technologies</p>	<p><b>Critical Depths for Higher Modes by Minimally-Invasive Seismic Profiling: Simulations and Field Test</b> Shibin Lin, Jeramy Ashlock, Iowa State University</p>	<p><b>Nuclear Magnetic Resonance – Field Applications of a New Tool for Enhanced Environmental Investigations</b> Matt Spurlin, ARCADIS</p>	<p><b>Optimization of Mobile Capacitively-Coupled Geophysical Surveys for Tunnel Discrimination</b> Thomas Goode, MWH Global; T.P.A. Ferré, Hydrology and Water Resources, University of Arizona; Andrew Hinnell, WorleyParsons Canada</p>
5:20 – 5:40 pm	<p><b>Advanced Models Applied to Live Site UXO Targets Classification</b> Fridon Shubritdze, Kevin O'Neill, Dartmouth College; Benjamin Barrowes, ERDC CRREL; Irma Shamatava, White River Technologies</p>		<p><b>Development of a Novel MRS-TEM Combined System and a Joint Inversion Algorithm for MRS and TEM Data</b> Ling Wang, Jun Lin, Tingting Lin, Jilin Univ; Xinlei Shang</p>	

SIMMONS		WELLESLEY		ARLINGTON		SUFFOLK	
	<p><b>UXO</b> Chair: Richard Funk</p>	<p><b>Surface Wave &amp; Passive Seismology</b> Chair: Christopher Buckman Co-Chair: Melwyn Best</p>	<p><b>NMR &amp; Magnetics</b> Chair: Denys Grombacher Co-Chair: Rick Hoover</p>	<p><b>Geophysical Data Management (GIS)</b> Chair: Ralf Birken</p>			
1:40 – 2:00 pm	<p><b>Comparison and Evaluation of Advanced UXO Classification Technologies</b> Steve Stacey, ARCADIS US, Inc.</p>	<p><b>Self-Adaptive Method for High-Frequency Dispersion Curve Determination</b> Zhiqiu Lu, Nat'l Center for Physical Acoustics, Univ of Mississippi</p>	<p><b>The Research and Practice of MRS Signals in Frozen Soil Layer Structure at Qinghai-Tibet Plateau</b> Liu Hao, Li Zhenyu, Huangjian Wu, China Univ of Geosciences</p>	<p><b>What is Metadata and Why Do You Want It: The Key to Effective Geophysical Data Management</b> Darren Mortimer, Natalie Green, Geosoft Inc; Nigel Halsall, Geosoft Europe Ltd.</p>			
2:00 – 2:20 pm	<p><b>Classification of Cued MetaMapper Data Using Data Mining Techniques</b> Darrall Hall, URS (Omaha Office)</p>	<p><b>Love-Wave Waveform Inversion for Shallow Shear-Wave Velocity Using a Conjugate Gradient Algorithm</b> Yudi Pan, Jianghai Xia, Lingli Gao, China Univ of Geosciences</p>	<p><b>First Evidence of Surface-NMR Signals Detected Using a B-Field Sensor</b> Mike Müller-Petke, Leibniz Institute for Applied Geophysics; Aaron Davis, CSIRO; Ronny Stolz, PHT Jena</p>	<p><b>Cloud Based Electrical Geophysical Monitoring</b> Roelof Versteeg, Doug Johnson, Alex Henrie, Subsurface Insights; Timothy Johnson, Pacific Northwest National Lab</p>			
2:20 – 2:40 pm	<p><b>A Detection Filter for Advanced Electromagnetic Induction Sensors Used for Unexploded Ordnance Surveys</b> Bruce Barrow</p>	<p><b>The Use of Active Love-Wave Techniques for Characterization of Seismographic Station Sites in California &amp; the Central &amp; Eastern US</b> Antony Martin, GEOVISION, Inc.; Alan Yong, US Geological Survey; Lawrence Salomone, Pinnacle Specialty Group, Inc.</p>	<p><b>Estimating the Larmor Frequency for Short Duration Signals</b> Denys Grombacher, Rosemary Knight, Stanford Univ</p>	<p><b>Web-Based Database of Integrated Geophysical Method for Levee Safety Assessment</b> Koichi Hayashi, Geometrics; Toru Takahashi, Fukada Geological Institute; Tomio Inazaki, Public Works Research Institute; Kaoru Kitao, Cubeworks, Inc.; Takaho Kita</p>			
2:40 – 3:00 pm	<p><b>UXO Mapping Efforts Used in Support of DOT Projects Outside of USACE Oversight</b> Christopher Buckman, Helen Corley, Raye Lahti, AMEC Environment &amp; Infrastructure</p>	<p><b>Seismic Site Response Classification Based on Multi-Mode Multi-Channel Analysis of Surface Waves: Integration of Downhole Acoustic/TelevIEWer Imaging and Ultrasonic Vp and Vs</b> Abdelmoneam Raef, Sultan Gaboos University; Sabreen Gad, Amelia Fader, Kansas State Univ</p>	<p><b>Characterizing Hydrocarbon Contamination in Porous Media with Multi-Parameter NMR</b> Emily Fay, Rosemary Knight, Stanford Univ; Bodin Sun, Zheng Yang, Eric Daniels Chevron Energy Technology Company</p>				
3:00 – 3:20 pm	<p><b>Geophysical &amp; UXO Operations in Support of Soil Remediation, South East Kuwait</b> Raye Lahti, AMEC Environment &amp; Infrastructure; Raymond Getchell, Gavin Cuthbert, AMEC; Dhari Al-Gharabally, Kuwait Oil Company</p>	<p><b>Multi-Phase Analysis of Surface Wave Data for the Detailed Imaging and Characterization of Levee Systems</b> Tomio Inazaki, Public Works Research Institute; Koichi Hayashi, Geometrics</p>	<p><b>Design of Rotation Matrix and Para-Whole Space Model for Underground Magnetic Resonance Sounding Studies</b> Tingting Lin, Jun Lin, Tiejun Fan, Jilin Univ; Xinlei Shang; Ling Wan, China Univ of Sciences</p>				
3:20 – 3:40 pm		<p><b>Improvements to the Near-Surface Velocity Model of the East San Francisco Bay Area using Surface Wave Methods</b> Mitchell Craig, Rania Adl, Seth Shuler, California State Univ, East Bay; Koichi Hayashi, Geometrics</p>	<p><b>Estimation of Hydraulic Conductivity in Unconsolidated Near-Surface Aquifers Using NMR Geophysics</b> Dave Walsh, Elliott Grunewald, Mercer Barrows, Vista-Clara, Inc.; James Butler, Gaisheng Liu, Steve Knobbe, Ed Reboulet, Kansas Geological Survey; Rosemary Knight, Stanford Univ; Andrew Parsekian, Univ of Wyoming</p>	<p><b>PAVEMON: A GIS-based PAVEMENT Monitoring System Using Large Amounts of Near-Surface Geophysical Sensor Data</b> Salar Shahini Shamsabadi, Ming L. Wang, Ralf Birken, Northeastern Univ</p>			



**Environmental  
and Engineering  
Geophysical Society**

EEGS wishes to acknowledge and extend its gratitude to the following companies and associations for exhibiting at SAGEEP 2013. It is through their support that we are able to keep the cost of attending SAGEEP affordable. We ask that you take a few moments and visit with each of the exhibitors listed below.

**Advanced Geosciences, Inc.  
Booth #1**

2121 Geoscience Drive  
Austin, TX 78726  
USA  
Phone: 1+512-335-3338  
Fax: 1+512-258-9958  
E-mail: sales@agiusa.com  
Website: www.agiusa.com

Advanced Geosciences is manufacturer of the SuperSting with WiFi® resistivity/IP/SP system and the SuperSting Manager Android App enabling brilliant color presentations of the survey in real time. Other products from AGI are the PowerSting high power external transmitter and EarthImager software. Wi-Fi® is a registered trademark of the Wi-Fi Alliance®

**Australian Society of Exploration  
Geophysicists  
Booth: Display in Exhibit Hall Foyer**

PO Box 8463  
Perth Business Centre, WA, 6849  
AUSTRALIA  
Phone: +61-8-0427-0838  
Contact: Koya Suto  
Email: secretariat@aseg.org.au  
Website: www.aseg.org.au

ASEG is a professional society with approximately 1,400 minerals and petroleum geophysicists, and environmental and engineering geophysicists. ASEG publishes a journal, *Exploration Geophysics*, jointly with SEG Japan and Korean SEG, and a magazine *Preview*. ASEG Conferences are held every eighteen months. Next conference is in Perth in February 2015. See <http://www.conference.aseg.org.au/>.

**Battelle  
Booth #35**

505 King Ave.  
Columbus, OH 43201  
USA  
Phone: (800) 201-2011  
Email: solutions@battelle.org  
Website: www.battelle.org

Every day, the people of Battelle apply science and technology to solving what matters most. Our geophysical survey systems detect and map small targets such as buried infrastructure and electrical conductivity. Around the world, Battelle conducts R&D, designs and manufactures products and delivers critical services for government and commercial customers.

**CGG  
Booth #2**

2505 Meadowvale Boulevard  
Mississauga, Ontario L5N 5S2  
CANADA  
Phone: +1 905 812 0212  
Fax: +1 905 812 1504  
Email: lee.davies@cgg.com  
Website: www.cgg.com

CGG offers the highest quality electromagnetic, magnetic, gravity, and gamma-ray spectrometric surveys on helicopter and fixed-wing platforms. Our proprietary technologies and world class geoscientists continually develop and advance the airborne marketplace for engineering geophysics.

**DECO Geophysical Software Co.  
Booth #7**

Moscow State University  
Science Park  
Leninskie Gory 1-77  
Moscow 119992  
RUSSIA  
Phone: +7 495 5327636  
E-mail: sb@radexpro.ru  
Website: www.radexpro.com

RadExPro seismic software for processing of near-surface seismics: reflection, refraction and MASW in one comprehensive package. Windows 8 compatible.

**DMT GmbH & Co. KG  
Booth #21**

Exploration & Geosurvey Division  
Am Technologiepark 1  
Essen 45307  
GERMANY  
Phone: +49 201 172-1544  
Fax: +49 201 172 1971  
Email: exploration@dmtd.de  
Website: www.dmt.de

DMT GmbH & Co. KG is a provider of seismic data acquisition and seismic monitoring systems. The modular SUMMIT System combines an extremely flexible field layout with greatest data quality in a wide range of applications in mining and infrastructure markets. For further information, refer to [www.summit-system.de](http://www.summit-system.de).

## **DW Consulting Booth #30**

Boekweitakker 28  
3773 BX Barneveld  
THE NETHERLANDS  
Phone: +31 342 422338  
Email: [info@dwconsulting.nl](mailto:info@dwconsulting.nl)  
Website: [www.dwconsulting.nl](http://www.dwconsulting.nl)

DW Consulting produces a range of Windows based software to acquire, assemble, process, visualize and publish 2D & 3D near-surface geophysical data. Supporting both traditional grid-based data and GPS formats, our products provide a complete acquisition-to-publication solution for small and medium scale geophysical surveys.

## **EAGE (European Association of Geoscientists and Engineers) Booth #15**

PO Box 59  
3990 DB Houten  
THE NETHERLANDS  
Phone: +31 88 995 5055  
Fax: +31 30 634 3524  
Email: [eage@eage.org](mailto:eage@eage.org)  
Website: [www.eage.org](http://www.eage.org)

EAGE is a professional association for geoscientists and engineers with approximately 17,000 members worldwide. For its Near Surface Division, EAGE organizes an annual meeting: This year, Athens, Greece, is the location and the dates are 14-18 September. EAGE and EEGS have a long history of a "Best Paper" exchange where winners are invited to present at each Society's annual near surface geoscience conference.

## **Environmental Equipment & Supply Booth #33**

491L Blue Eagle Avenue  
Harrisburg, PA 17112  
USA  
Phone: (800) 739-7706  
Fax: (717) 901-8114  
Email: [sales@envisupply.com](mailto:sales@envisupply.com)  
Website: [www.envisupply.com](http://www.envisupply.com)

EE&S has been a supplier of rental geophysics equipment for over 20 years, renting everything from the basic metal detector to borehole logging equipment. Your equipment is shipped overnight with the rental period beginning the day you receive the shipment. We look forward to meeting your equipment needs.

## **Exploration Instruments, LLC Booth #3**

2808 Longhorn Blvd., Suite 304  
Austin, TX 78758  
USA  
Phone: (512) 346-4042  
Fax: (512) 832-5233  
Email: [info@expins.com](mailto:info@expins.com)  
Website: [www.expins.com](http://www.expins.com)

Exploration Instruments is the best-known geophysical equipment rental firm in North America specializing in near-surface applications. We maintain a diverse inventory of 400 units available in 85 different systems including seismic, radar, EM, gravity, magnetics, resistivity, radiometrics, hydrologic, marine and borehole logging tools. We rent by the day and ship anywhere in the world.

## **GEM Advanced Magnetometers Booth #13**

135 Spy Court  
Markham, Ontario, L3R 5H6  
CANADA  
Phone: +1 905 752 2202  
Fax: +1 905 752 2205  
Email: [info@gemsys.ca](mailto:info@gemsys.ca)  
Website: [www.gemsys.ca](http://www.gemsys.ca)

GEM Advanced Magnetometers is a leading global manufacturer of ground and airborne magnetometers and gradiometers for near surface projects. GEM delivers a wide range of systems including the popular Overhauser and Potassium series. Multi-sensor units are available for projects where time is at a premium. Visit [www.gemsys.ca](http://www.gemsys.ca). Our World is Magnetic!

## **Geogiga Technology Corp. Booth #9**

1600, 144-4 Avenue SW  
Calgary, Alberta T2P 3N4  
CANADA  
Phone: (403) 398-8098  
Fax: (403) 269-3537  
Email: [sales@geogiga.com](mailto:sales@geogiga.com)  
Website: [www.geogiga.com](http://www.geogiga.com)

As a leading worldwide software provider, Geogiga Technology produces user-friendly and powerful software packages for Reflection, Refraction, Surface Waves and Borehole Seismic in near-surface geophysics. This show will demonstrate the coming release - Geogiga Seismic Pro 7.5, and highlight the latest software in processing tunnel seismic.



# EXHIBITORS

## **Geomar Software, Inc. Booth #14**

899 Runningbrook Drive  
Mississauga, Ontario L4Y2S4  
CANADA  
Phone: (905) 306-9215  
Email: [geomar@geomar.com](mailto:geomar@geomar.com)  
Website: [www.geomar.com](http://www.geomar.com)

Geomar develops software for various electromagnetic instruments and selected magnetometers. The TrackMaker package provides data acquisition with real time GPS/RTS navigation, the RTmap software adds real time color mapping. The Multi programs support various types of EM61-MK2 (or Grad601) arrays and GPS/RTS with simultaneous navigation and real time mapping capabilities. More information is available at [www.geomar.com](http://www.geomar.com).

## **Geometrics, Inc. Booth #19**

2190 Fortune Dr.  
San Jose, CA 95131  
USA  
Phone: 1-408-954-0522  
Fax: 1-408-954-0902  
Email: [sales@geometrics.com](mailto:sales@geometrics.com)  
Website: [www.geometrics.com](http://www.geometrics.com)

Geometrics manufactures, sells, rents, and services magnetometers, seismographs, and electrical conductivity and resistivity systems for land, marine, and air investigations of the subsurface.

## **Geonics Limited Booth #12**

1745 Meyerside Drive  
Mississauga, Ontario L5T 1C6  
CANADA  
Phone: (905) 670-9580  
Fax: (905) 670-9204  
Email: [geonics@geonics.com](mailto:geonics@geonics.com)  
Website: [www.geonics.com](http://www.geonics.com)

Geonics Limited manufactures a broad range of surface and downhole electromagnetic (EM) geophysical instrumentation including: industry-standard Ground Conductivity Meters, for environmental / geotechnical site characterization, and EM61 near-surface Metal Detectors; and PROTEM time domain electromagnetic (TDEM) systems for high-resolution resistivity sounding to depths of 5 m to 1000 m.

## **Geophex, Ltd. Booth #31**

605 Mercury Street  
Raleigh, NC 27603  
USA  
Phone: +1 919 839 8515  
Fax: +1 919 839 8528  
Email: [oren@geophex.com](mailto:oren@geophex.com)  
Website: [www.geophex.com](http://www.geophex.com)

Geophex, Ltd. is a geophysical research and instrumentation company founded in 1983 and headquartered in Raleigh, North Carolina. Geophex, Ltd. develops, manufactures, and sells geophysical instruments. It also conducts special and customized geophysical investigations including magnetic and electromagnetic surveys.

## **Geoscientists Without Borders® Booth #25**

8801 South Yale Avenue, Suite 500  
Tulsa, OK 74137  
USA  
Phone: (918) 497-5500  
Fax: (918) 497-5560  
Email: [rjacobs@seg.org](mailto:rjacobs@seg.org)  
Website: [www.seg.org/gwb](http://www.seg.org/gwb)

SEG's program Geoscientists *Without Borders*® (GWB®) supports humanitarian applications of geosciences around the world. The program has supported 17 near surface projects on six continents. It is made possible through many corporate and individual donations. Partnerships directly enhance the project outcomes and the entire program benefits from your generous support. GWB provides life-changing experiences for geoscience project teams and dramatically helps communities mitigate the effects of geohazards long-term. For more information on GWB®, please visit [www.seg.org/gwb](http://www.seg.org/gwb).

## **Geosoft, Inc. Booth #18**

810-207 Queens Quay West  
Toronto, Ontario  
M5J 1A7  
CANADA  
Phone: +1 416 369 0111  
Email: [info@geosoft.com](mailto:info@geosoft.com)  
Website: [www.geosoft.com](http://www.geosoft.com)

Geosoft provides industry-standard software and custom solutions to integrate and manage all of your geophysical, geological, and geochemical data, including the detection and classification of unexploded ordnance (UXO). Contractors, consultants, government, and industry use Geosoft to map and analyze environmental, archeological, airborne, ground and marine survey data.

# EXHIBITORS

## **Geostuff, Inc. Booth #39**

1579 Lupine Lane  
Lincoln, CA 95648  
USA  
Phone: (916) 258-1090  
Email: [info@Geostuff.com](mailto:info@Geostuff.com)  
Website: [www.Geostuff.com](http://www.Geostuff.com)

GEOSTUFF manufactures essential seismic accessories including the AnySeis™ cableless exploration seismograph, wall-lock borehole geophones, land streamers, and rollalong switches. Our products are used worldwide for collecting refraction, reflection and MASW data along with near surface shot-hole logging, static corrections, and engineering site response.

## **GF Instruments Booth #17**

Jecna 29a  
62100 Brno  
CZECH REPUBLIC  
Phone: +420 549 522 919  
Fax: +420 549 522 915  
Email: [info@gfinstruments.cz](mailto:info@gfinstruments.cz)  
Website: [www.gfinstruments.com](http://www.gfinstruments.com)

GF Instruments is a manufacturer of instruments for geophysical, geological, engineering-geological and environmental use. The traditional range of products includes systems for 2D/3D resistivity imaging and deep VES (ARES, multi-channel ARES II, GEPS-2000), gamma-ray spectrometers (Gamma Surveyor, supercompact Gamma Surveyor II) and electromagnetic conductivity meters (CMD) with extended range of probes, including the three-depth CMD-Explorer and Mini Explorer. The new magnetic susceptibility meter for field surveys to several depths named Multi Kappa has recently extended the group of instruments for this purpose.

## **GISCO, Inc. Booth #40**

6323 Cambridge Street  
Minneapolis, MN 55416  
USA  
Phone: (952) 929-8000  
Fax: (952) 926-5498  
Email: [Ann.Hildreth@GiscoGeo.com](mailto:Ann.Hildreth@GiscoGeo.com)  
Website: [www.giscogeo.com](http://www.giscogeo.com)

GISCO has developed its unique reputation as a one-stop worldwide geophysical instrument source, providing professionals with total support in instrumentation and field supplies. GISCO is a full service supplier providing selection and application assistance, system integration, training, rental, leasing, and instrument repair.

## **GSSI Booth #5**

12 Industrial Way  
Salem, NH 03079-4843  
USA  
Phone: +1 603 893 1109  
Fax: +1 603 889 3984  
Email: [sales@geophysical.com](mailto:sales@geophysical.com)  
Website: [www.geophysical.com](http://www.geophysical.com)

GSSI is the world leader in the development and manufacture of subsurface imaging products. Our ground penetrating radar systems are used to non-destructively explore the subsurface of the earth. GSSI created the first commercial GPR system nearly 45 years ago and continues to provide the highest quality GPR and EM equipment available today.

## **Hager GeoScience, Inc. Booth #6**

596 Main Street  
Woburn, MA 01801  
USA  
Phone: +1 (781) 935-8111  
Fax: +1 (781) 935-2717  
Email: [hgi@hagergeoscience.com](mailto:hgi@hagergeoscience.com)  
Website: [www.hagergeoscience.com](http://www.hagergeoscience.com)

Hager GeoScience, Inc. (HGI) is a small, woman-owned business that has for over 20 years been providing expertise in surface and borehole geophysics to solve engineering, environmental, and infrastructure problems. Using an integrative approach, our professional staff applies state-of-the-art equipment and software to clients' projects.

## **IDS North America, Ltd. Booth #28**

418, Sherbrooke Street East, Suite 200  
Montreal, QC H2L 1J6  
CANADA  
Phone: +1 514 789-0082  
Fax: +1 514 398-0527  
Email: [a.galanis@idscorporation.com](mailto:a.galanis@idscorporation.com)  
Website: [www.idscorporation.com/na](http://www.idscorporation.com/na)  
Contact: Antonios Galanis

IDS provides products and solutions for geophysical, civil engineering and security applications. Through a continuous commitment to research & development, the IDS GeoRadar Division provides its customers with innovative products which exploit state-of-the-art technologies and novel solutions. Thanks to this commitment, over the years IDS has also pioneered radar technologies for civil applications as breakthrough products in this domain.

# EXHIBITORS

## **Intelligent Resources, Inc. Booth #34**

Suite 142, 757 West Hastings Street  
Vancouver BC V6C 1A1  
CANADA  
Phone: 1 604 782-9845  
Email: rayfract@gmail.com  
Website: www.rayfract.com

Our Rayfract® Seismic Refraction and Borehole Tomography software provides reliable interpretation of first break traveltime data, with Fresnel Volume Tomography. Supports land-based and marine refraction surveys, and crosshole and VSP tomography. Now allows plotting of layer-based refractors on 2D velocity tomogram. Utilizes multiple CPU cores.

## **Interpex Limited Booth #23**

PO Box 839  
Golden, CO 80402-0839  
USA  
Phone: +1 303 278 9124  
FAX: +1 303 278 4007  
Email: info@interpex.com  
Website: www.interpex.com

Interpex Limited has provided PC-based software packages for shallow geophysics since 1986, initially offering DOS-based packages for most methods used in shallow geophysics. In the Windows environment, we have combined multiple functionality into a few powerful packages for DC Resistivity, IP, FEM, TEM, MT, EM Conductivity, Seismic Refraction, Gravity/Magnetics and Seismic Reflection Processing.

## **IRIS Instruments Booth #11**

1 Avenue Bupfon  
Orleans 45060  
FRANCE  
Phone: + 33 2 38 63 81 00  
Fax: + 33 2 38 63 81 82  
Email: info@iris-instruments.com  
Website: www.iris-instruments.com

IRIS Instruments provides a wide range of geophysical instruments for environmental, groundwater, geotechnical and mining applications:

- Resistivity meters for 1D sounding and 2D/3D imaging (SYSCAL, SYSCAL Pro type)
- Induced Polarisation systems for shallow and deep investigations (VIP and ELREC types)
- VLF systems for shallow resistivity profiling (T-VLF)
- Multi-Frequency EM Profiling system with 3D receiver (PROMIS)
- Nuclear Magnetic Resonance system for groundwater detection (NUMIS type)

## **MALÅ Geoscience USA, Inc. Booth #20**

465 Deanna Lane  
Charleston, SC 29492  
USA  
Phone: (843) 852-5021  
Fax: (843) 284-0684  
Email: sale.usa@malags.com  
Website: www.malags.com

MALÅ Geoscience releases its cutting edge High Dynamic Range (HDR) series of antennas for 2014. HDR performance is superior to any conventional GPR technology in the field. The HDR series is available at a range of frequencies for any geological or geophysical GPR investigation and boast superior depth penetration and bandwidth that mimics a dual f antenna.

## **Mount Sopris Instrument Co., Inc. Booth #22**

4975 E 41st Avenue  
Denver, CO 80216  
USA  
Phone: +1 303 279 3211  
Fax: +1 303 279 2730  
Email: sales@mountsopris.com  
Website: www.mountsopris.com

Visit Mount Sopris and ALT at SAGEEP 2014 for the latest information on the new 2nd generation acoustic televiewer, WellCAD Version 5.0, and the new 4IWA-1000, 2500 meter winch.

## **NDT Corporation Booth #29**

153 Clinton Road  
Sterling, MA 01564  
USA  
Phone: (978) 563-1327  
Fax: (978) 563-1340  
Email: Klane@ndtcorporation.com  
Paul.Fisk@ndtcorporation.com  
Website: www.ndtcorporation.com

NDT Corporation provides nondestructive and geophysical testing services. Nondestructive methods are used to determine the condition and integrity of concrete structures: pipes, tunnels, tanks and dams. Geophysical methods are used to characterize soil and bedrock for seismic design and planning, directional drilling, pipe jacking and new pipeline projects.

**Olson Engineering, Inc.  
Booth #10**

12401 W. 49th Avenue  
Wheat Ridge, CO 80033  
USA  
Phone: (303) 423-1212  
Fax: (303) 423-6071  
Email: phil@olsonengineering.com  
Website: www.olsonengineering.com

Olson Engineering, Inc. specializes in solving problems for engineers regarding structural and infrastructure condition assessment, and geoscientists regarding geological and geotechnical problems needing site characterization. The company expertly applies both NDE and engineering geophysical methods to provide superior structural assessment and subsurface imaging to our customers. Olson also designs, assembles and distributes world class NDT instrumentation. Visit [www.olsonengineering.com](http://www.olsonengineering.com) and [www.olsoninstruments.com](http://www.olsoninstruments.com).

**PetRos EiKon Incorporated  
Booth #32**

10A Bram Court, Unit 9-10  
Brampton, Ontario L6W3R6  
CANADA  
Phone: 1-905-796-0324  
Email: sales@petroseikon.com  
Website: www.petroseikon.com

Established in March 1994, PetRos EiKon has been successfully servicing the geophysical community for 20 years. We design, develop and sell leading edge geophysical data processing, imaging, simulation and inversion software for the mining, oil and gas, environmental and geotechnical industries. We also offer contract research and software services.

Additionally, we provide a wide range of geophysical services, relying on our extensive experience in data acquisition using a variety of instruments as well as processing, analysis and interpretation of data from every corner of the globe.

**Pro-Seismic Services, LLC  
Booth #37**

5291 Langfield Road  
Houston, TX 77040  
USA  
Phone: (713) 263-0272  
Fax: (713) 290-9415  
Email: heros@proseismic.com  
Website: www.proseismic.com

**R.T. Clark Co. Inc.  
Booth #8**

PO Box 20957  
Oklahoma City, Oklahoma 73156  
USA  
Phone: (405) 751-9696  
Fax: (405) 751-6711  
Email: rtclark@rtclark.com  
Website: www.rtclark.com

Serving the Geophysical/Geotechnical industry for OVER 30 YEARS. Sales/brokerage, rentals and appraisals of NEW and USED/second-hand equipment. Providing Seismic Recording Systems, Geophones, Cables, Ground Penetrating Radar, Magnetometers, Gravity Meters, EM, IP, Resistivity Meters and More. Manufacturer of LAND ENERGY SOURCES – PEG-40 Propelled Energy Generator, Ballard Borehole Source. Distributor of Single Geophones, Connectors, Hydrophones, Cables and More.

**Seismic Source Company  
Booth #27**

9425 E Tower Rd  
Ponca City, OK 74604  
USA  
Phone: (580) 762-8233  
Fax: (580) 762-1785  
Email: mail@seismicsource.com  
Website: www.seismicsource.com

Seismic Source Company (SSC) provides a variety of electronics and software packages for every seismic industry. This includes equipment and software for testing, synchronizing and controlling Vibrators, Dynamite and AWD Units. International Seismic Corporation (iSeis) builds a series of gps-synced, continuous-recording, cable-free seismographs for crews of all sizes. iSeis provides software for monitoring acquisition, data collection and creating shot records (active datasets) or time windows (passive monitoring).

**Seistronix, LLC  
Booth #36**

3299D Monier Cr., Suites C & D  
Rancho Cordova, CA 95742  
USA  
Phone: (916) 851-1890  
Fax: (916) 851-1852  
Email: sales@seistronix.com  
Website: www.seistronix.com

Seistronix is the manufacturer of a broad range of seismographs, all utilizing 24-bit A/D converters. Products begin with a 12 or 24 channel Remote Acquisition System that has become the best selling engineering seismograph in the world. On the high end, Seistronix manufactures 6 and 12 channel distributed systems which are capable of expansion to 3000+ channels for large scale, high quality, 2D and 3D reflection surveys. Our latest seismic product utilizes GPS timing and disciplined oscillators to allow recording times of up to 5 hours without losing synchronization between the multiple acquisition units.

# EXHIBITORS

## **Sensors & Software, Inc. Booth #16**

1040 Stacey Court  
Mississauga, Ontario L4W 2X8  
CANADA  
Phone: (905) 624-8909  
Fax: (905) 624-9365  
Email: sales@sensoft.ca  
Web: www.sensoft.ca

Sensors & Software Inc. is recognized worldwide as the innovation leader in GPR products. The Noggin® is a user-friendly, integrated GPR system for geotechnical and environmental surveys. For professional GPR service providers, the pulseEKKO® PRO offers extended versatility and flexibility. For multi-sensor needs, inquire about our latest SPIDAR products.

## **Society of Exploration Geophysicists (SEG) Booth #24**

8801 South Yale Avenue, Suite 500  
Tulsa, OK 74137  
USA  
Phone: (918) 497-5500  
Fax: (918) 497-5560  
Email: wemerick@seg.org  
Website: www.seg.org

The Society of Exploration Geophysicists (www.seg.org), the international society of applied geophysics, is a not-for-profit organization that promotes the science of geophysics and the education of applied geophysicists. SEG exists to inspire, connect and propel the geophysicist and the application of geophysics. We foster the expert and ethical practice of geophysics in the exploration and development of natural resources, in characterizing the near surface, and in mitigating Earth hazards. The Society, which has more than 32,000 members in 138 countries, fulfills its mission through its publications, conferences, forums, educational opportunities, and multiple website resources.

## **Terraplus, Inc. Booth #26**

52 West Beaver Creek Rd., Unit # 12  
Richmond Hill, Ontario L4B 1L9  
CANADA  
Phone: (905) 764-5505  
Fax: (905) 764-8093  
Email: sales@terraplus.ca  
Website: www.terraplus.ca

Terraplus provides rentals and sales for a wide range of geophysical instruments and software. These include Airborne and Ground Magnetometers (Potassium, Overhauser and Proton), 2D/3D Resistivity/IP Systems, GPR and Borehole Systems, Airborne and Ground Radiometrics, Magnetic Susceptibility and Conductivity Meters, TDEM/CSAMT/HLEM Systems, Seismographs and more. Our complete line is available on our website: www.terraplus.ca.

## **Vista Clara, Inc. Booth #4**

12201 Cyrus Way, Suite 104  
Mukilteo, WA 98275  
USA  
Phone: (425) 493-8122  
Fax: (425) 493-8223  
Email: info@vista-clara.com  
Website: www.vista-clara.com

Vista Clara develops and manufactures advanced NMR instrumentation for groundwater, mining, environmental, and geotechnical applications. An expansive product line of surface-based, downhole, and laboratory NMR tools is available for sale or rental with expert customer support. Vista Clara also provides on-site training and comprehensive NMR field services at economical rates.

## **Zonge International, Inc. Booth #38**

3322 E. Fort Lowell Rd.  
Tucson, AZ 85716  
USA  
Phone: (520) 327-5501  
FAX: (520) 325-1588  
Email: norman.carlson@zonge.com  
Website: www.zonge.com

For over 40 years, Zonge has been manufacturing and selling a full line of state-of-the-art equipment for electrical and electromagnetic geophysics, as well as providing contract field services. Our equipment line includes transmitters, receivers, magnetometers, and sensors. Services include resistivity, MT, AMT, IP, CSAMT, TEM, seismic, gravity, and specialized research projects.



**Sold To:**

Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Country: \_\_\_\_\_ Phone: \_\_\_\_\_  
E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

**Ship To (If different from "Sold To"):**

Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Country: \_\_\_\_\_ Phone: \_\_\_\_\_  
E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

**Instructions:** Please complete both pages of this order form and fax or mail the form to the EEGS office listed above. Payment must accompany the form or materials will not be shipped. Faxing a copy of a check does not constitute payment and the order will be held until payment is received. Purchase orders will be held until payment is received. If you have questions regarding any of the items, please contact the EEGS Office. Thank you for your order!

**SAGEEP PROCEEDINGS**

Member/Non-Member

Member/Non-Member

			Member	Non-Member
	0036	2014 (CD-ROM)**NEW**	\$75	\$100
	0034	2013 (CD-ROM)	\$75	\$100
	0033	2012 (CD-ROM)	\$75	\$100
	0030	2011 (CD-ROM)	\$75	\$100
	0029	2010 (CD-ROM)	\$75	\$100
	0026	2009 (CD-ROM)	\$75	\$100
	0025	2008 (CD-ROM)	\$75	\$100
	0023	2007 (CD-ROM)	\$75	\$100

			Member	Non-Member
	0020	2006 (CD-ROM)	\$75	\$100
	0018	2005 (CD-ROM)	\$75	\$100
	0016	2004 (CD-ROM)	\$75	\$100
	0015	2003 (CD-ROM)	\$75	\$100
	0014	2002 (CD-ROM)	\$75	\$100
	0013	2001 (CD-ROM)	\$75	\$100
	0012	1988-2000 (CD-ROM)	\$150	\$225
SUBTOTAL—PROCEEDINGS ORDERED:				

**SAGEEP Short Course Handbooks**

			Member	Non-Member
	0039	2013 Agricultural Geophysics: Methods Employed and Recent Applications - Barry Allred, Bruce Smith, et al.	\$35	\$45
	0038	2010 Processing Seismic Refraction Tomography Data (including CD-ROM) - William Doll	\$35	\$45
	0037	2011 Application of Time Domain Electromagnetics to Ground-water Studies - David V. Fitterman	\$20	\$30
	0032	2010 Application of Time Domain Electromagnetics to Ground-water Studies - David V. Fitterman	\$20	\$30
	0027	2010 Principles and Applications of Seismic Refraction Tomography (Printed Course Notes & CD-ROM) - William Doll	\$70	\$90
	0028	2009 Principles and Applications of Seismic Refraction Tomography (CD-ROM w/ PDF format Course Notes) - William Doll	\$70	\$90
	0007	2002 - UXO 101 - An Introduction to Unexploded Ordnance - (Dwain Butler, Roger Young, William Veith)	\$15	\$25
	0009	2001 - Applications of Geophysics in Geotechnical and Environmental Engineering (HANDBOOK ONLY) - John Greenhouse	\$25	\$35
	0011	2001 - Applications of Geophysics in Environmental Investigations (CD-ROM ONLY) - John Greenhouse	\$80	\$105
	0010	2001- Applications of Geophysics in Geotechnical and Environmental Engineering (HANDBOOK) & Applications of Geophysics in Environmental Investigations (CD-ROM) - John Greenhouse	\$100	\$125
	0004	1998 - Global Positioning System (GPS): Theory and Practice - John D. Bossler & Dorota A. Brzezinska	\$10	\$15
	0003	1998 - Introduction to Environmental & Engineering Geophysics - Roelof Versteeg	\$10	\$15
	0002	1998 - Near Surface Seismology - Don Steeples	\$10	\$15
	0001	1998 - Nondestructive Testing (NDT) - Larry Olson	\$10	\$15
	0005	1997 - An Introduction to Near-Surface and Environmental Geophysical Methods and Applications - Roelof Versteeg	\$10	\$15
	0006	1996 - Introduction to Geophysical Techniques and their Applications for Engineers and Project Managers - Richard Benson & Lynn Yuhr	\$10	\$15

**Miscellaneous Items**

			Member	Non-Member
	0031	Advances in Near-surface Seismology and Ground Penetrating Radar—R. Miller, J.Bradford, K.Holliger Special student rate - \$95.00	\$109	\$149
	0021	Geophysics Applied to Contaminant Studies: Papers Presented at SAGEEP from 1988-2006 (CD-ROM)	\$50	\$75
	0022	Application of Geophysical Methods to Engineering and Environmental Problems - Produced by SEGJ	\$35	\$45
	0019	Near Surface Geophysics - 2005 Dwain K. Butler, Ed.; Hardcover Special student rate - \$71.20	\$89	\$139
	0035	Einstein Redux: A Humorous & Refreshing New Chapter in the Einstein Saga—D.Butler	\$20	\$25

MISCELLANEOUS ITEMS CONTINUED ON NEXT PAGE...

PUBLICATIONS ORDER FORM

	EEGS T-shirt (X-Large) Please circle: white/gray	\$10	\$10
	EEGS Lapel Pin	\$3	\$3
SUBTOTAL—SHORT COURSE/MISC. ORDERED ITEMS:			

**Journal of Environmental and Engineering Geophysics (JEEG) Back Issue Order Information:**  
 Member Rate: \$15 | Non-Member Rate: \$25

Qt.	Year	Issue	Qt.	Year	Issue	Qt.	Year	Issue
	1995	JEEG 0/1 - July		2004	JEEG 9/1 - March		2009	JEEG 14/1 - March
		JEEG 0/2 - January			JEEG 9/2 - June			JEEG 14/2 - June
	1996	JEEG 1/1 - April			JEEG 9/3 - September			JEEG 14/3 - September
		JEEG 1/2 - August			JEEG 9/4 - December			JEEG 14/4 - December
		JEEG 1/3 - December		2005	JEEG 10/1 - March		2010	JEEG 15/1 - March
	1998	JEEG 3/2 - June			JEEG 10/2 - June			JEEG 15/2 - June
		JEEG 3/3 - September			JEEG 10/3 - September			JEEG 15/3 - September
		JEEG 3/4 - December			JEEG 10/4 - December			JEEG 15/4 - December
	1999	JEEG 4/1 - March		2006	JEEG 11/1 - March		2011	JEEG 16/1 - March
		JEEG 4/2 - June			JEEG 11/2 - June			JEEG 16/2 - June
		JEEG 4/3 - September			JEEG 11/3 - September			JEEG 16/3 - September
		JEEG 4/4 - December			JEEG 11/4 - December			JEEG 16/4 - December
	2000	JEEG 5/3 - September		2007	JEEG 12/1 - March		2012	JEEG 17/1 - March
		JEEG 5/4 - December			JEEG 12/2 - June			JEEG 17/2 - June
	2001	JEEG 6/1 - March			JEEG 12/3 - September			JEEG 17/3 - September
		JEEG 6/3 - September			JEEG 12/4 - December			JEEG 17/4 - December
		JEEG 6/4 - December		2008	JEEG 13/1 - March		2013	JEEG 18/1 - March
	2003	JEEG 8/1 - March			JEEG 13/2 - June			JEEG 18/2 - June
		JEEG 8/2 - June			JEEG 13/3 - September			JEEG 18/3 - September
		JEEG 8/3 - September			JEEG 13/4 - December			JEEG 18/4 - December
		JEEG 8/4 - December						
SUBTOTAL—JEEG ISSUES ORDERED								

SUBTOTAL - SAGEEP PROCEEDINGS ORDERED	
SUBTOTAL - SHORT COURSE / MISCELLANEOUS ITEMS ORDERED	
SUBTOTAL - JEEG ISSUES ORDERED	
CITY & STATE SALES TAX (If order will be delivered in the Denver, Colorado—add an additional 7.62%)	
SHIPPING & HANDLING (US—\$10; Canada/Mexico—\$20; All other countries: \$45)	
<b>GRAND TOTAL:</b>	

Order Return Policy: Returns for credit must be accompanied by invoice or invoice information (invoice number, date, and purchase price). Materials must be in saleable condition. Out-of-print titles are not accepted 180 days after order. No returns will be accepted for credit that were not purchased directly from EEGS. Return shipment costs will be borne by the shipper. Returned orders carry a 10% restocking fee to cover administrative costs unless waived by EEGS.

**Payment Information:**

- Check #: \_\_\_\_\_ (Payable to EEGS)
- Purchase Order: \_\_\_\_\_  
(Shipment will be made upon receipt of payment.)
- Visa    MasterCard    AMEX    Discover

Important Payment Information: Checks from Canadian bank accounts may be drawn on banks with US affiliations (example: checks from Canadian Credit Sulsse banks are payable through Credit Sulsse New York, USA). If you are unsure, please contact your bank. As an alternative to paying by check, recommend sending money orders or paying by credit card.

Card Number: \_\_\_\_\_  
 Exp. Date: \_\_\_\_\_

Cardholder Name (Print): \_\_\_\_\_  
 Signature: \_\_\_\_\_

# Thank you

**With EEGS' help, GWB has funded  
17 near-surface projects in 14 countries.**



**Come meet Dr. Charlotte Krawczyk, author of “Quick-clay Landslides in Sweden – Insights from Shear-wave Reflection Seismics and Geotechnical Integration,” Sunday, March 16 during the Ice Breaker.**

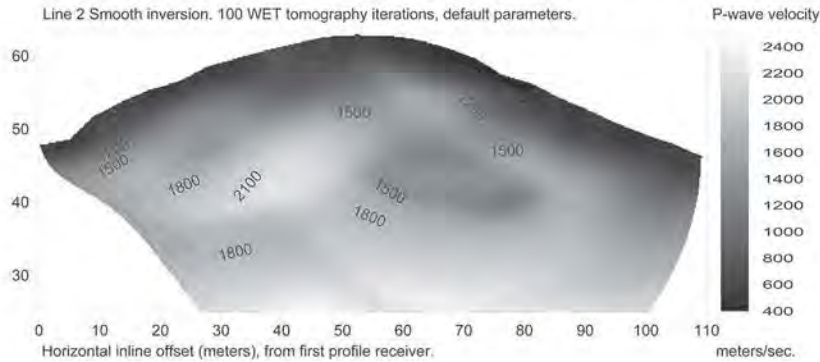
**Booth #24**



**For more information about GWB, please see [www.seg.org/gwb](http://www.seg.org/gwb).  
To make a difference, please visit [www.seg.org/donate](http://www.seg.org/donate).**



**INTELLIGENT RESOURCES INC.** offers **RAYFRACT®** Seismic Refraction & Borehole Tomography software : velocity structure imaging for engineering and exploration



Intelligent Resources Inc.  
142-757 West Hastings Street  
Vancouver BC V6C 1A1  
Canada

Phone +1 604 782-9845  
Web <http://rayfract.com>  
E-mail [rayfract@gmail.com](mailto:rayfract@gmail.com)

350 full licenses sold.

Our Rayfract® travelttime tomography software models refraction, transmission and diffraction of seismic waves, with Fresnel volumes. Import or pick first breaks then run our Smooth inversion or DeltatV+XTV methods. Supports extreme topography, strong lateral velocity variation, local velocity inversions. Uses multiple CPU cores. Invert cross-hole and downhole VSP surveys. Build synthetic models with Surfer®, forward model traveltimes. Plot Plus-Minus, Wavefront, CMP refractors on tomogram. Import SEG-Y and SEG-2 trace files, compatible with most seismographs. Flexible trace display, frequency filtering, shot stacking. Reads third-party ASCII file formats with first breaks and recording geometry. Standard license price is US \$ 2,200.00 including one year of support. Price reduction of 20% for academic and non-profit use. Visit our web site for latest release notes, updated help file, free trial, tutorials and published benchmark comparisons. Rent our software. Resellers welcome.

Copyright © 1996-2014 Intelligent Resources Inc. RAYFRACT is a registered trademark of Intelligent Resources Inc. Canadian Business No. 86680 1236. British Columbia PST No. PST-1015-0246. Requires Golden Software's Surfer for plotting.

# EXPLORE

**Near Surface  
Geophysics at SEG**

**Visit us at Booth #24!**

*near surface programs*

to promote the practice  
of near-surface geophysics



Society of Exploration Geophysicists  
*The international society of applied geophysics*

[www.seg.org/ns](http://www.seg.org/ns)