

PRELIMINARY PROGRAM



SAGEEP 2012

March 25-29, 2012

Tucson, Arizona

Hilton Tucson El Conquistador

25th ANNIVERSARY

SYMPOSIUM ON THE APPLICATION OF GEOPHYSICS
TO ENGINEERING & ENVIRONMENTAL PROBLEMS

SAGEEP 25
TUCSON, AZ | MARCH 2012

“MAKING WAVES:
GEOPHYSICAL INNOVATIONS FOR A THIRSTY WORLD”

CONFERENCE HIGHLIGHTS

Oral & Poster Presentations

Keynote Speaker: William deBuys,
Pulitzer Prize finalist, “Hotter and Drier:
Climatic Challenges of the 21st Century
Southwest”

Luncheon Speaker: EEGS / Geonics Early
Career Award Recipient Adam Pidlisecky

Field Trips: Arizona-Sonora Desert Museum
and Kartchner Caverns

Exhibitors Equipment Outdoor
Demonstrations

Workshops:
Hydrofracking101
Trends in Resistivity and IP
Seismic Refraction Methods

Student Social Event

EEGS Foundation Luncheon Speaker: Madeline
Dana Lee, “Hydrogeophysical Investigation
for Groundwater at the Dayspring Children’s
Village, South Africa”

Short Courses:
Surface Waves
Advanced Surface Waves
Electrical Resistivity/IP/SP

SAGEEP Hospitality Events - including
Entertainment and a Special Local Silversmith
Demonstration at the Ice Breaker!

Best of 2011 EAGE/NSGD Presentations

Conference Evening Social Event and 25th
Anniversary Celebration

And Much More!

WWW.EEGS.ORG



Note: This is a preliminary program and subject to
change. Please do not make travel arrangements
based on this schedule.

INVITATION TO ATTEND



Esteemed Colleague,

I am very pleased to welcome you to the beautiful desert of Tucson, Arizona to mark a historic milestone: the 25th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP).

I am honored to serve as your general chair this year, and I can't think of a more perfect setting for this momentous occasion. Whether you are a frequent traveler to southern Arizona or this will be your first visit, there is no shortage of unforgettable experiences to be had here.

Everyone has seen images of the icon of the desert southwest: the saguaro cactus. But it's quite another thing to see scores of them dotting the ridges and canyons of the Sonoran desert. Outdoor enthusiasts flock to Tucson for hiking, biking and golf, taking advantage of the 350 days of sunshine the area enjoys per year. Star-gazers love the unparalleled clear desert night sky and attendees will likely be awestruck by the distinctive, craggy Santa Catalina range – the symposium site is nestled in its foothills.

Tucson culture and cuisine are legendary, thanks to the incredibly diverse history of southern Arizona. Explore archaeological sites and petroglyphs by day and dine on world-class Mexican and other cuisines by night. Uniquely Tucson Mercados (markets) and art galleries can be found all over town. And for true explorers, the city is located just one hour from the Mexican border, two hours from Phoenix and under six hours from the Grand Canyon's south rim. Don't miss the opportunity to acquaint yourself with the incredibly unique regional flora and fauna by taking part in the conference's two field trips: attendees have the option of visiting world-renowned Kartchner Caverns, a living cave prior to its discovery in the 1970s with very unusual geological formations, and the Arizona-Sonora Desert Museum, a must-see for any newcomer to Tucson. The open-air museum perfectly recreates the iconic natural landscape of the region from a natural history, zoological and geological standpoint – but with living, breathing exhibits including mountain lions, javelinas, Bighorn sheep, rattlesnakes and Gila monsters.

The theme for our 2012 gathering, "Making Waves: Geophysical Innovations for a Thirsty World," is clearly a timely one – the United Nations refers to water scarcity as one of the main problems facing the world in the 21st century. But it is also perfectly suited to our setting in the semi-arid southwest. Our keynote speaker, Pulitzer Prize finalist William deBuys, will explore the topic in detail during his presentation, "Hotter and Drier: Climatic Challenges of the 21st Century Southwest," and the theme will be expanded upon throughout our five-day conference.

This year's technical program, developed by Technical Chair Gail Heath, consists of no less than 27 sessions encompassing over 200 papers and poster presentations. The depth and breadth of the topics presented is a reflection of the far-reaching practicality of near-surface geophysical techniques in numerous environmental and engineering disciplines. For the second year, joint AGU and SEG sessions will expand the discourse on a wider range of topics. Louise Pellerin, SEG special liaison, has been instrumental in organizing three joint sessions chaired by respected researchers in their respective fields.

Jeff Paine, Short Course and Workshop Chair, has organized an engaging array of short courses and workshops. The popular full day Surface Waves (MASW) short course on Saturday and the advanced, three-quarter day course on Sunday are being held before the start of the conference. A third short course on Electrical Resistivity/IP/SP for Environmental and Engineering Applications will appeal to professionals who are involved in, beginning to consider, or have oversight/review responsibilities of others currently conducting DC Resistivity, IP or SP surveys. The materials covered are intended to provide a better understanding of the strengths of 1D, 2D, 3D and 4D resistivity/IP imaging and SP monitoring methods. For the first time, a workshop focusing on the hot-button topic of hydrofracking will discuss issues of concern such as adequate water supply, monitoring of fracking operations and induced seismicity, the impact on the water-quality, and policy and regulatory questions. The Seismic Refraction workshop will explore the subject matter and algorithms related to tomographic analysis, in addition to emerging opportunities for improved refraction solutions, including full waveform and three-dimensional methods. A third workshop on shallow applications of resistivity and IP is organized by Zonge International. All three workshops are full day events and will take place on Thursday, March 29th.

As you will know by the time you read this invitation, we celebrate SAGEEP's silver anniversary this year. Be sure to attend the Ice Breaker on Sunday, the students' event on Monday and the evening gala on Tuesday as they will all showcase a sample of the regional talent, culture and cuisine. This year's luncheons - EEGS on Tuesday, and the Foundation on Wednesday – will feature outstanding speakers of great interest to our members. Our celebration coincides with the week of Zonge International's 40th anniversary – a very happy coincidence. Zonge has been a long-time supporter of our society and has planned festivities throughout the year at various conferences and symposia, and we are proud to include them in SAGEEP 2012.

March is one of the very best times to visit southern Arizona. With the warmer days of spring, wildflowers burst into colorful bloom throughout Tucson, and average daytime temperatures in March range from a balmy 72°F (23°C) during the day to a cool 45°F (7°C) overnight – although it could get considerably warmer in the sun. All visitors should pack a hat (preferably with a wide brim), comfortable shoes, layers of clothing for warm and cool temperatures, and carry plenty of water even when not exercising, due to the extremely warm, dry climate. Sunscreen is a must.

I hope you will join us and be a part of an important anniversary celebration. We look forward to a memorable SAGEEP 25th anniversary, and wish you an unforgettable visit to the desert southwest.

Moe Momayez, SAGEEP 2012 General Chair

INVITATION

SAGEEP 2012 PRELIMINARY PROGRAM

Saturday March 24				
All Day	SC-1: Surface Waves are for Everyone (Active and Passive MASW) Instructor: Julian Ivanov, Kansas Geological Survey and Geometrics, Inc.			
Sunday March 25				
3/4 Day	SC-2: Advanced Surface Wave (MASW) Methods Instructor: Julian Ivanov, Kansas Geological Survey and Geometrics, Inc.			
All Day	SC-3: Electrical Resistivity/IP/SP for Environmental and Engineering Applications Instructor: Bradley J. Carr, PhD, Advanced Geosciences, Inc.			
Half Day	Arizona-Sonora Desert Museum Field Trip			
Evening	Ice Breaker			
Monday March 26				
Awards and Keynote Session: <i>William deBuys, Author and Pulitzer Prize Finalist</i>				
Coffee in Exhibit Hall				
Morning	Session 1	Session 2	Session 3	Session 4
	SPECIAL SESSION: Best of 2011 EAGE/NSGD			
Lunch	Lunch on Own			
Afternoon	Advances in Mining Geophysics	Determination of Shear Wave Velocities for Geological and Engineering Applications	Advances in Geophysical Characterization & Monitoring of Fractured Rock Aquifers	Use of Geophysical Data for Evidence-Based Groundwater Management
	Coffee in Exhibit Hall			
Late Afternoon	Exhibitors Equipment Outdoor Demos (Sunset Point on the Grounds of the El Conquistador)			
Evening	Student Event at Barrio Brewing in Downtown Tucson			
Tuesday March 27				
Morning	Water Resources and Supply	Application of Geophysics to Contaminant Studies	Dam Safety-The Use of Geophysical Methods for its Diagnostics and Monitoring	Role of Geophysics in Addressing Civil, Geotechnical and Geoenvironmental Engineering Problems
	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer			
Lunch	Laboratory Measurements of Near Surface Geophysical Properties	Application of Geophysics to Contaminant Studies (con't)	Dam Safety-The Use of Geophysical Methods for its Diagnostics and Monitoring (con't)	Role of Geophysics in Addressing Engineering Problems (con't)
	EEGS Luncheon - Speaker: EEGS / Geonics Early Career Award Winner <i>Adam Pidlisecky</i>			
Afternoon	Archaeological and Forensics Applications of Near-Surface Geophysics	Munitions and Explosives of Concern - Instrumentation, Classification, and Application to Live Sites	Karst Geophysics Applied to Environmental, Hydrogeological and Geotechnical Problems	Role of Geophysics in Addressing Engineering Problems (con't)
	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer			
Evening	Hydrologic Applications for Borehole Geophysics- New Developments	Munitions and Explosives of Concern (con't)	Geophysical Methods in Dam, Spillway, and Levee Investigations	Geophysics in Rivers and Streams
	SAGEEP Conference Evening and 25th Anniversary Celebration at the Last Frontier			
Wednesday March 28				
Morning	Multichannel GPR Techniques, Advances and Case Histories	Role of Geophysical Methods in Geotechnical Earthquake & Hazards Engineering	Devel. & App. of Nuclear Magnetic Resonance Techniques for Near-Surface Investigations	Advances in Hydrogeophysical Monitoring
	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer			
Lunch	Multichannel GPR Techniques, Advances & Case Histories (con't)	Airborne Geophysics: Recent Advances and Novel Applications	Magnetic Resonance Techniques for Near-Surface Investigations	Advances in Agricultural Geophysics
	EEGS Foundation Luncheon: <i>Madeline Dana Lee</i>			
Afternoon	Educational Innovations Involving Near-Surface Geophysics	Airborne Geophysics: Recent Advances and Novel Applications (con't)	Development & Applications of Nuclear Magnetic Resonance Techniques (con't)	Advances in Agricultural Geophysics (con't)
	Coffee in Exhibit Hall and Poster Viewing in Exhibit Hall Foyer			
Evening	Geophysical Studies of the Vadose Zone	Airborne Geophysics: Recent Advances and Novel Applications (con't)	Seismic Refraction Tomography	Geophysics-Assisted Eval. of Geotechnical /Transport. Process & Construction
Thursday March 29				
All Day	W-1: Trends in Resistivity and IP for Shallow Applications Convenor: Norman R. Carlson, Zonge International, Inc.			
	W-2: Hydrofracking 101: What is it, What are the Issues, and How Can Geophysics Help? Convenors: Michael Jacobs, Pioneer Resources; Charles Groat and Jeffrey G. Paine, UT at Austin; and Bruce Smith, USGS			
All Day	W-3: Seismic Refraction Methods: Unleashing the Potential and Understanding the Limitations Convenors: William E. Doll, Battelle; Seth Haines, USGS; and Colin Zelt, Rice University			
All Day	Kartchner Caverns Field Trip			

INVITED SPEAKERS

“HOTTER AND DRIER: CLIMATIC CHALLENGES OF THE 21ST CENTURY SOUTHWEST”

SAGEEP 2012 KEYNOTE SPEAKER, WILLIAM DEBUYS

Monday, March 26, 2012

In his Keynote presentation, “Hotter and Drier: Climatic Challenges of the 21st Century Southwest,” Bill deBuys will survey the climate-driven environmental changes to which Southwestern society will be obliged to adapt in the decades ahead. Some of these, like increased water scarcity and large-scale forest fires, are obvious. Others, including urban heat islands and the paradox of water conservation and diminishing water security, are less so. In either case, the changes promise a transformation of the region.

William deBuys's seven books include *A Great Aridness: Climate Change and the Future of the American West* (released by Oxford University Press in November 2011), *River of Traps* (a 1991 Pulitzer finalist), *The Walk* (an excerpt from which won a Pushcart Prize in 2008), and *Salt Dreams* (winner of a Western States Book Award in 1999). He was a 2008-2009 Guggenheim Fellow. As a conservationist, he has helped protect more than 150,000 acres in New Mexico, Arizona, and North Carolina. From 2001 to 2005, he served as founding chairman of the Valles Caldera Trust, which administers the 89,000-acre Valles Caldera National Preserve. Recent writing projects have taken him as far afield as Borneo and Lao PDR. He lives and writes on a small farm in northern New Mexico.

EEGS LUNCHEON

EEGS / GEONICS EARLY CAREER AWARD RECIPIENT
AND SPEAKER, ADAM PIDLISECKY

Tuesday, March 27, 2012

The 2012 recipient of the EEGS / Geonics annual Early Career Award (ECA), Adam Pidlisecky, University of Calgary, will deliver the EEGS Luncheon talk. The prestigious ECA acknowledges academic excellence that also encourages research in near-surface geophysics. Register early, limited space available.

“HYDROGEOPHYSICAL INVESTIGATION FOR GROUNDWATER AT THE DAYSRING CHILDREN’S VILLAGE, SOUTH AFRICA”

EEGS FOUNDATION LUNCHEON SPEAKER, MADELINE DANA LEE

Wednesday, March 28, 2012

In her talk, “Hydrogeophysical investigation for groundwater at the Dayspring Children’s Village, South Africa” Madeline presents an overview of the main objectives and initial results, the importance of promoting humanitarian applications for geophysics, and how she was not only able to contribute her personal experience and skills but what she also learned as a student, an advisor, and an international collaborator. Madeline started working in Africa in 2008 as a consultant for the large-scale geophysical survey in Uganda. She became involved in Geoscientists Without Borders® (GWB) after having met Dr. Susan Webb (University of the Witwatersrand) and being introduced to the GWB project. Since 2009, Madeline has aided with on-site geophysical surveys and subsequent data processing. Her participation in the project, through fieldwork and first-hand discussion, aids in establishing collaborative ties between South Africa and Canada and the education of students in applied hydrogeophysics.

Madeline is in the final year of a PhD from McMaster University, working in conjunction with the Geological Survey of Canada and the National Research Council. Her research focuses on semi-automated interpretation methods applied to magnetic data for natural resources exploration.

The luncheon is sponsored by the EEGS Foundation. Non-students are encouraged to contribute \$35 or more. Students are invited gratis (no charge).

EARLY-BIRD CONFERENCE REGISTRATION DEADLINE MARCH 9, 2012

Register Online at www.eegs.org and click SAGEEP 2012

2012 SHORT COURSES/WORKSHOPS SUMMARY

Full day short courses/workshops include full course notes, continental breakfast, lunch and refreshments during breaks.

SC-1 Surface Waves Are for Everyone (Active and Passive MASW)

Date: Saturday, March 24, 2012 **Time:** 8 am-5 pm
Instructor: Julian Ivanov, Kansas Geological Survey and Geometrics, Inc.

The course focuses on the practical applications of the multichannel analysis of surface waves (MASW) method, presenting the most current approaches to both active and passive estimations of 1-D and 2-D shear-wave velocity (V_s) profiles to depths of a few tens of meters using surface waves. Includes a brief theoretical overview and field procedures to ensure success, software practice using a sample data set, a brief field work session using the Geometrics Geode seismograph to demonstrate field procedures and acquire actual field data, and processing of the field data you acquire. Covers some of the latest developments in MASW analysis, including practical field-parameter estimations, multi-mode inversion and sensitivity analysis. Course goal is to build a sufficient understanding that participants are confident in applying the MASW method in their work. Participants are encouraged to bring a Windows XP/Vista/7 notebook/ laptop computer, with a screen resolution set to 1024 x 768 or better, to process short course data. Participants will be provided with the most recent version of the SurfSeis software (i.e., 3.07) to use during the short course.

SC-2 Advanced Surface Wave (MASW) Methods

Date: Sunday, March 25, 2012 **Time:** 10 am-5 pm
Instructor: Julian Ivanov, Kansas Geological Survey and Geometrics, Inc.

This advanced, three-quarter day course will cover various practical topics related to data acquisition and analysis, such as, optimum field spread-size determination, fixed-spread data acquisition (useful when having extra geophones), muting for enhancement of dispersion-curve images, inversion sensitivity, and advantages of a-priori density information. Additional topics can cover case studies (e.g., studying levees, mapping fault zones), challenging dispersion-curve patterns, and most recent MASW advancements, such as HRLRT for dispersion-curve imaging and multi-mode inversion. It is expected that participants will use their own laptops with SurfSeis 3 installed and licensed.

SC-3: Electrical Resistivity/IP/SP for Environmental and Engineering Applications

Date: Sunday, March 25, 2012 **Time:** 8 am-5 pm
Instructor: Bradley J. Carr, PhD, Advanced Geosciences, Inc.

This course is designed for professionals who are involved in, beginning to consider, or have oversight/review responsibilities of others currently conducting DC Resistivity, IP or SP surveys. This short course will cover DC Resistivity, IP, and SP topics such as: theory; data acquisition; field procedures; data processing; data presentation; and interpretation. The course will also provide attendees a better understanding of the strengths of 1D, 2D, 3D and 4D resistivity/IP imaging and SP monitoring methods through the discussion of various case histories, survey design, forward modeling and inversion and the use of data processing/analysis software as applied to surface, borehole, marine and time-lapse monitoring data.

W-1: Trends in Resistivity and IP for Shallow Applications

Date: Thursday, March 29, 2012 **Time:** 8 am-5 pm
Convenor: Norman R. Carlson, Zonge International, Inc.

Near surface geophysics is arguably the fastest growing area of research and development as it provides distinct advantages over traditional, more time-consuming investigation methods such as drilling, sampling and trenching. Geophysical techniques are less expensive and offer the opportunity to continuously image the subsurface. Advances in instrumentation design, computer hardware and data processing software have all contributed to the development of novel and highly sophisticated imaging techniques. This workshop focuses on the application of resistivity and IP over a wide range of scales for geotechnical and geoenvironmental investigations.

W-2 Hydrofracking 101: What is it, What are the Issues, and How Can Geophysics Help?

Date: Thursday, March 29, 2012 **Time:** 8 am-5 pm
Convenors: Michael Jacobs, Pioneer Resources; Charles Groat and Jeffrey G. Paine, The University of Texas at Austin; and Bruce Smith, U.S. Geological Survey

Hydrofracking is a hot-button topic among industry groups, regulators, and citizens in many parts of the U.S. where it is being used to enhance hydrocarbon production from vertical and horizontal wells. Issues of concern include ensuring an adequate water supply, monitoring of fracking operations, induced seismicity, and possible water-quality impacts, yet few outside industry understand the hydrofracking process. This workshop is intended to educate attendees on the hydrofracking process, issues of concern, and geophysical approaches to addressing those issues. Topics to be covered include an introduction, history, and description of the types of hydrofracking; possible impacts associated with injection, water use, and the fracturing process; current geophysical monitoring of hydrofracking; and geophysical approaches that could address issues of concern to regulators and the public.

W-3: Seismic Refraction Methods: Unleashing the Potential, and Understanding the Limitations

Date: Thursday, March 29, 2012 **Time:** 8 am-5 pm
Convenors: William E. Doll, Battelle; Seth S. Haines, U.S. Geological Survey; and Colin Zelt, Rice University

Seismic refraction tomography is widely used to address a broad range of near-surface problems. Many practitioners hold tomographic methods in high regard, because these approaches typically yield a velocity model that is simple (smooth) and that is thought to be more representative of near-surface structures than blocky or layered models. Some have raised concerns with smooth models and suggest that a layered model is more appropriate. Others focus on starting models, and contend that the use of simple or otherwise inappropriate starting models can bias the outcome of the inversion. Still others believe that the best approach is to apply different inverse methods in order to elucidate the range of model nonuniqueness. We will discuss concerns regarding tomographic analysis and we will describe algorithms that address these issues. In addition, we will explore emerging opportunities for improved refraction solutions, including full waveform and three-dimensional methods. Contributed presentations will be included in the afternoon session and a panel discussion will round out the day.

2012 CONFERENCE & EVENT INFORMATION

Help EEGS Control SAGEEP Costs!

Make reservations at the host hotel, the Hilton Tucson El Conquistador.

EEGS is not charged for conference facilities if it commits to a minimum number of room nights - please take advantage of the negotiated rates **by March 7, 2012**. Limited government rates available.

TAKE ADVANTAGE OF THESE GREAT RATES!

Single/Double Rate*: \$159

Government Rate: \$103**

* Special rates are applicable to reservations 2 days prior to and 1 day post conference. Hotel room rates are subject to applicable state and local taxes (currently 15.1%). All reservations must be accompanied by a first night room deposit or guaranteed with a major credit card.

** Government rates are available and will require a valid government photo ID at the time of check-in.

RESERVE YOUR ACCOMMODATIONS by telephone or online. Call 1-800-325-7832 (USA Country Code is +1) and ask for the group rate for SAGEEP or EEGS Annual Meeting (use code SAG or, for the government rate, code SAG1). Or, make your hotel reservations online: a special group web page has been set up at: <http://goo.gl/C965f>. Be sure to click the Government Rate link on the landing page if you qualify for the special government rate. You can also access www.eegs.org, click on the SAGEEP 2012 button, select the Venue/Hotel tab and click on the El Conquistador link to go directly to the SAGEEP reservation page.

Reservations must be made by March 7, 2012 to qualify for the special rates.

CONFERENCE HOTEL INFORMATION

**Hilton Tucson El Conquistador/10000 North Oracle Road
Tucson, Arizona 85704 USA**

Hotel: Tel: 520-544-5000 (USA Country Code is +1)

Special SAGEEP Accommodation Reservation Website: <http://goo.gl/C965f>

Located on 500 acres of serene, colorful high Sonoran Desert terrain in the foothills of the majestic Santa Catalina Mountains, the full-service Hilton Tucson El Conquistador offers a magnificent setting, minutes from the city's renowned entertainment, restaurants and cultural attractions.

TRAVEL INFORMATION AND DRIVING DIRECTIONS

From Tucson International Airport - Follow interstate 10 west to Ina Road. Exit Ina Road, turn right and head east to Oracle Rd (about 5.3 miles). Turn left onto Oracle Road (north) and continue 2.5 miles to El Conquistador Way. Turn right and the Resort is on your right. Distance from hotel: 23 miles; Drive time: 30 - 45 minutes. The closest airport is the Tucson International Airport; however, Sky Harbor Phoenix International Airport, is approx. 109 miles away. Driving Directions: Follow interstate 10 south and exit onto US-60/I-10E. Take exit 248 towards Ina Rd.; turn left onto W. Ina Rd. and left onto N. Oracle Road. to El Conquistador Way. Turn right and the Resort is on your right.

ARIZONA-SONORA DESERT MUSEUM HALF-DAY FIELD TRIP SUNDAY, MARCH 25

The Arizona-Sonora Desert Museum is a world-renowned zoo, natural history museum and botanical garden. At the same time, the Museum has gained a worldwide reputation in the scientific community as an institution committed to researching and protecting the land, plants, and the animals of the Sonoran Desert region. Eighty-five percent of the museum is outside with almost 2 miles of paths traversing 21 acres of beautiful desert. Includes museum fees and transportation.

OUTDOOR DEMONSTRATIONS MONDAY, MARCH 26

Monday afternoon, the Exhibitors Equipment Outdoor Demonstrations will be conducted at Sunset Point, on the grounds of the El Conquistador in full view of the Catalina mountains. The event is free to conference attendees; however, please indicate your intention to attend on the registration form (badge required to attend). Light refreshments served.

CONFERENCE EVENING DINNER / 25TH ANNIVERSARY EVENT TUESDAY, MARCH 27

The Conference Evening dinner, cocktails and music entertainment will also feature some 25th Anniversary celebratory surprises! Network, enjoy the sights and sounds of the southwest and help EEGS celebrate the 25th Anniversary of SAGEEP "under the stars" at the Last Territory on the grounds of the El Conquistador.

FULL DAY KARTCHNER CAVERNS TOUR, THURSDAY, MARCH 29

Kartchner Caverns, with its wide variety of speleothems, is one of the world's 10 most interesting caves from a mineralogical standpoint. A little over 2 mile (3.9 km) long cave developed into a block of Escabrosa Limestone (Lower Carboniferous) in the Basin and Range of southeastern Arizona and during the summer months, serves as a nursery roost for over 1,000 female cave myotis bats. Includes transportation, tours of both rooms and lunch.

STUDENT VOLUNTEERS/SCHOLARSHIPS AVAILABLE

Students who work two shifts at SAGEEP are eligible to receive a registration fee rebate. Contact EEGS: tel. (303) 531-7517 or e-mail (staff@eegs.org) by February 24, 2012. Geometrics is pleased to offer a limited number of student scholarships: Students in good standing at an educational institution and able to provide an application letter signed by a faculty member can e-mail linda@geometrics.com (e-mail only please).

STUDENT EVENT AT BARRIO BREWING WITH ENTERTAINMENT MONDAY EVENING, MARCH 26

Students are invited to get together for dinner, entertainment provided by the Dusty Buskers, and beverages at this Tucson microbrewery in the warehouse district. Enjoy the outdoor patio and mountain views. Join colleagues for networking and "rail pints", a Barrio innovation! Begins after the Outdoor Demonstration. Non-students welcome.

SAGEEP 2012 REGISTRATION FORM

Mail or Fax completed registration form & payment to: **EEGS/SAGEEP 2012**
1720 S. Bellaire St., #110
Denver, CO 80222-4303 USA
(USA country code is +1)
Tel: 303-531-7517
Fax: 303-820-3844
E-mail: staff@eegs.org

Please print or type. Deadline for Early-Bird Registration Discount is March 9, 2012. Register online at www.eegs.org

A. Delegate Information

Name: _____ Email: _____
 Company/Affiliation: _____
 Address: _____
 City/State/Zip/Country: _____
 Telephone: _____ Fax: _____

Note: This is a preliminary program and subject to change. Please do not make travel arrangements based on this schedule.

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

Registration must be received by the close of business on Friday, March 9, 2012 to receive the Early-Bird rates. Payment must be in US dollars and accompany the completed registration form. Please contact EEGS if you have any questions. Cancellation Policy: No Refunds After March 9, 2012. Pre-registration deadline is March 9, 2012. After this date, on-site registration only.

Check box if member: EEGS ASCE-GI SEG-J ASEG AEG SEG AGU Member rate is available to EEGS, ASCE-GI, SEG, SEG-J, ASEG, AGU and AEG members. Please complete a separate form for each registrant. Check boxes and circle appropriate rates to indicate your choices.

B. Conference Registration

MONDAY ONLY March 26, 2012

Monday Only conference includes: keynote address, oral and poster presentations, exhibits, conference program book and 25% off the purchase of one copy of SAGEEP 2012 Proceedings CD-ROM.

<input type="checkbox"/> Member Rate:	Early-Bird	On-Site
	\$250	\$350
<input type="checkbox"/> Non-Member Rate:	\$350	\$450

SAGEEP CONFERENCE RATE

Conference rate includes: ice breaker, keynote address, oral and poster presentations, exhibits, conference program book and one copy of SAGEEP 2012 Proceedings CD-ROM.

<input type="checkbox"/> Member Rate:	Early-Bird	On-Site
	\$485	\$585
<input type="checkbox"/> Non-Member Rate:	\$585	\$685

STUDENT RATE

(Must be able to demonstrate that you are currently enrolled in an accredited science or engineering undergraduate or graduate program or have graduated in the past 2 years.) Includes same as SAGEEP Conference rate.

<input type="checkbox"/> Member Rate:	Early-Bird	On-Site
	\$105	\$180
<input type="checkbox"/> Non-Member Rate:	\$155	\$230

EXHIBITORS

Exhibiting companies receive one (1) full conference registration and two (2) complimentary exhibit personnel registrations for each paid booth space as well as one copy of the SAGEEP 2012 Proceedings CD-ROM. Additional exhibit personnel registrations may be purchased at the \$50 exhibitor registration fee. Exhibitor registration fees include all printed program materials and admission to food and beverage events held in the exhibit hall. Even though the registration fee is complimentary, please complete this form.

<input type="checkbox"/> Comp Full Conference Registration (Limit 1 per 10x10 booth)	Early-Bird	On-Site
	\$0	\$0
<input type="checkbox"/> Comp Exhibit Personnel (Limit 2 per 10x10 booth)	\$0	\$0
<input type="checkbox"/> Additional Exhibit Personnel	\$50	\$50

C. Short Courses and Workshops

	EEGS Members		Non-Members	
	Early-Bird	On-Site	Early-Bird	On-Site
*SC-1: Surface Waves are for Everyone (Sat)	\$398	\$498	\$498	\$598
Student Rate:	\$123	\$173	\$173	\$223
*SC-2: Advanced Surface Wave (MASW) Methods (Sun)	\$296	\$396	\$396	\$496
Student Rate:	\$92	\$142	\$142	\$192
*SC-3: Electrical Resistivity/IP/SP for Environmental and Engineering Applications (Sun)	\$398	\$498	\$498	\$598
Student Rate:	\$123	\$173	\$173	\$223
*W-1: Trends in Resistivity and IP for Shallow Applications (Thurs)	\$188	\$288	\$288	\$388
Student Rate:	\$73	\$123	\$123	\$223
*W-2: Hydrofracking 101: What is it, What are the Issues, and How Can Geophysics Help? (Thurs)	\$188	\$288	\$288	\$388
Student Rate:	\$73	\$123	\$123	\$173
*W-3: Seismic Refraction Methods: Unleashing the Potential, and Understanding the Limitations (Thurs)	\$188	\$288	\$288	\$388
Student Rate:	\$73	\$123	\$123	\$223

D. Additional SAGEEP 2012 Proceedings

<input type="checkbox"/> \$75 per copy (member):	Total Copies _____	\$ _____	Total
<input type="checkbox"/> \$100 per copy (non-member):	Total Copies _____	\$ _____	Total

Shipping & Handling: (# copies x price + Shipping & Handling = Total \$)

USA \$7 Canada/Mexico \$15 Other Countries \$40

E. Luncheons / Activities

	Early-Bird	On-Site
Student Event at Barrio Brewing (Mon) Student price/Non-Students	\$0/30	\$0/40
Event includes transportation, dinner & beverage		
EEGS Luncheon (Tues)	\$40	\$50
Speaker: EEGS / Geonics ECA Recipient Adam Pidlisek		
SAGEEP Conference Evening Event at Last Territory (Tues)	\$85	\$85
EEGS Foundation Luncheon (Wed)	Suggested Donation:	\$35
Donations Accepted in Lieu of Luncheon Price		
Students: No Charge/Donation		
Exhibitors Equipment Outdoor Demonstrations (Mon)	\$0	\$0

F. Tours/Field Trips

	Early-Bird	On-Site
*Half Day Arizona-Sonora Desert Museum Field Trip (Sun)	\$43	\$53
Tour includes transportation and entrance fees		
*Full Day Karchner Caverns Tour (Thurs)	\$100	\$110
Tour includes transportation, lunch & entrance fees to both rooms		

G. Payment Information (US dollars only)

Check # _____ (Made Payable to EEGS)
 MC Visa Discover Amex
 Card Number: _____ Exp. Date: _____
 Name on Card: _____
 Signature: _____

A. EEGS Membership: \$ 90.00 (electronic JEEG) \$ _____
 \$ 100.00 (printed, mailed JEEG) \$ _____

Register for SAGEEP at Member Rates - become a member today! Contact EEGS (online at www.eegs.org) for Corporate Membership information & EEGS Foundation contribution options.

B. SAGEEP Conference Registration

Monday Only SAGEEP \$ _____
 Full SAGEEP Conference \$ _____
 Student SAGEEP \$ _____
 Exhibitor \$ _____

C. Short Courses/Workshops

SC-1 Surface Waves are for Everyone \$ _____
 SC-2 Advanced Surface Wave (MASW) Methods \$ _____
 SC-3 Electrical Resistivity/IP/SP \$ _____
 W-1 Trends in Resistivity and IP/Shallow Application \$ _____
 W-2 Hydrofracking 101 \$ _____
 W-3 Seismic Refraction Methods \$ _____

D. Additional SAGEEP 2012 Proceedings

E. Luncheons/Activities \$ _____
 Student Event at Barrio Brewing (dinner/entertainment) - Mon \$ _____
 Outdoor Demonstrations - Mon \$ _____
 EEGS Luncheon ECA Speaker - Tues \$ _____
 SAGEEP Conference Evening at Last Territory - Tues \$ _____
 EEGS Foundation Luncheon - Wed (specify donation amt) \$ _____

F. Tours/Field Trips

Arizona-Sonora Desert Museum Half Day Field Trip - Sun \$ _____
 Karchner Caverns Full Day Tour - Thurs \$ _____

G. Abstract Submission Fee

Check box if you paid an abstract fee(s) and subtract this amount -\$ _____

TOTAL: USD \$ _____

Note: Attendees may be photographed by EEGS for archival and marketing purposes (however, not during scientific sessions).

* EEGS reserves the right to cancel this event if minimum requirements are not met by March 9, 2012. Tours have limited capacity - register early.