



Fall 2009

# The Earth Scientist

## Save the Date

Join the Stanford School of Earth Sciences for the following free events!

### 2009 Events

#### OCTOBER 6

Alumni reception\* at the Society of Petroleum Engineers Conference, New Orleans, LA

#### OCTOBER 19

Alumni reception\* at the Geological Society of America Conference, Portland, OR

#### OCTOBER 23

Earth Sciences barbecue during Reunion Weekend, 4-6 p.m., Mitchell Earth Sciences Building patio, Stanford campus

#### OCTOBER 26

Alumni reception\* at the Society of Exploration Geophysicists Conference, Houston, TX

#### DECEMBER 14

Alumni reception\* at the American Geophysical Union Conference, San Francisco, CA

*(continued on back page)*

## Stanford Earth Sciences Welcomes Four New Faculty Members



**Noah Diffenbaugh**, BS '97, MS '97, is a new assistant professor in the Department of Environmental Earth System Science. He comes to Stanford from Purdue University, where he was an assistant professor in the Department of Earth and Atmospheric Sciences. His research interests are in the areas of climate change, biosphere-atmosphere feedbacks, paleoclimatology, and earth system modeling.



**Eric Dunham** is a new assistant professor in the Department of Geophysics. He is a seismologist, focusing on fault mechanics and rupture modeling. He comes to Stanford from Harvard, where he was a Reginald A. Daly Postdoctoral Fellow in the Department of Earth and Planetary Sciences, and a lecturer in applied mathematics at Harvard's School of Engineering and Applied Sciences.



**Eric Lambin** has accepted a joint appointment between the School of Earth Sciences and the Woods Institute for the Environment. He will join the Stanford faculty in January 2010 as the George and Setsuko Ishiyama Provostial Professor. Professor Lambin's research focuses on the nature, causes, implications, and consequences of land use and land use change. He is currently a professor of geography at the University of Louvain in Belgium.



**David Lobell**, PhD '05, is a new assistant professor in the Department of Environmental Earth System Science. Previously, he was a senior research scholar at Stanford's Program on Food Security and the Environment and, prior to that, a Lawrence Postdoctoral Fellow at Lawrence Livermore National Laboratory. His research focuses on identifying opportunities to raise crop yields in major agricultural regions, with a particular emphasis on adaptation to climate change.



## Extreme Environments Lab

LAUNCHED WITH RENOVATION and equipment support from the Chevron Corporation, Assistant Professor Wendy Mao's Extreme Environments Laboratory investigates the behavior of a wide range of materials under high pressure. This includes studying iron-rich compounds and alloys—major components of the earth's mantle and core—at the high pressures and temperatures within our planet. Working with petrologists, geochemists, seismologists, and geodynamicists, they hope to better understand the rich array of large-scale processes and phenomena in the earth's deep interior. The group also

utilizes high pressure to study the volatile gases and ices that are the key constituents of the gas giant planets and their icy satellites. Some of the newly discovered phases may lead to practical applications such as hydrogen fuel storage. Professor Mao's group uses a suite of laboratory and synchrotron radiation techniques for characterizing materials in-situ at extreme conditions.

Related story: High-pressure compound could be key to hydrogen-powered vehicles. <http://news.stanford.edu/news/2009/may13/ammon-051309.html>.

*Above, left: Yu Lin, GES graduate student and lead author of a paper describing work in the lab. Above, right: Assistant Professor Wendy Mao. Top: Bristlecone Pine Forest, Owens Valley.*

*“These are challenging times, but also exciting ones, and we are looking forward to another productive academic year.”*

## A New Academic Year

I'm delighted to introduce another issue of the Earth Scientist. This is our opportunity to share with you a bit of what is going on at the School of Earth Sciences, and I hope you will enjoy reading about some of our activities.

While a lot of attention of late has been taken up by budget concerns, we have been able to move forward with some important initiatives, a few of which you'll read about in this publication. These are challenging times, but also exciting ones, and we are looking forward to another productive academic year.

As always, your comments and suggestions about the newsletter are welcome and appreciated. Please let us hear from you.

With best wishes and thanks for your interest in our efforts,

*Pamela Matson*

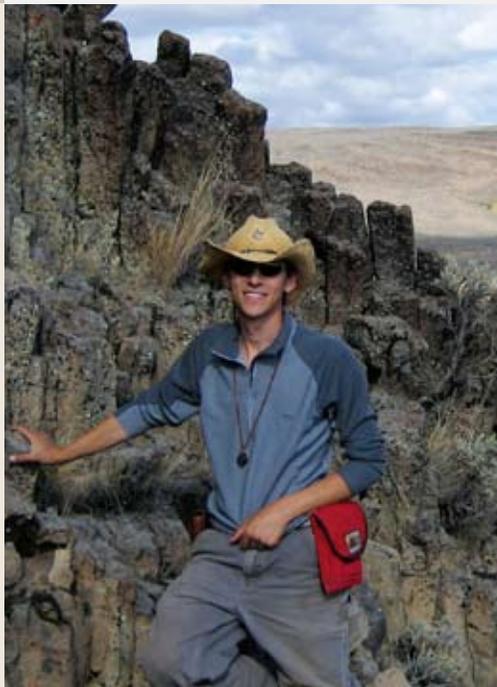


**Pamela A. Matson**

*Chester Naramore Dean,  
School of Earth Sciences*

*Richard and Rhoda Goldman  
Professor of Environmental Studies*

*Matthew Coble, 2009-10 Stanford-USGS Fellow, Department of Geological and Environmental Sciences*



## Matthew Coble Named 2009–10 Stanford-USGS Fellow

MATTHEW COBLE, a graduate student in the Department of Geological and Environmental Sciences, was named the 2009-10 Stanford-USGS Fellow. The Stanford-USGS Fellowship was created nearly 25 years ago by donors at the U.S. Geological Survey, who continue to support it annually, and recognizes the long and productive collaboration between Stanford Earth Sciences and the survey.

Matthew is from Portland, Oregon, where he excelled in math and science as a high school student. He earned a BS in geology from Oregon State University in 2004, and was awarded a National Association of

Geology Teachers (NAGT) summer internship (recognizing his outstanding performance during summer field camp) at the U.S. Geological Survey, Menlo Park working for Walter Mooney in the earthquakes hazards team. He then moved to a position as a consulting geologist with the USGS where he focused on a variety of projects, including the United States Agency for International Development (USAID) proposal for the Indian Ocean tsunami early warning system, and three seismic reflection and refraction studies in Nevada, California, and Virginia.

*(continued on page 3)*

## Field Programs in the School of Earth Sciences

THE SCHOOL OF Earth Sciences recognizes that field-based education is both a fundamental component of undergraduate education and an integral part of the professional development of earth scientists and engineers.

Field-based education provides students with hands-on opportunities to understand earth's dynamic processes and develop their observational, spatial, and problem-solving skills. In addition, students learn the field methods and techniques required to be a professional scientist or researcher. Field opportunities offered by the School of Earth Sciences reflect the diversity of its academic departments and majors.

The Department of Geologic and Environmental Sciences offer numerous field-based courses including the newest addition, GES 105: *Introduction to Field Mapping*. Led by Professors Elizabeth Miller and Marty Grove and based in the Poleta Folds, White Mountains, California, students use observational skills and field methods to interpret the geologic evolution of the area.

Earth Systems majors have the opportunity to enroll in EARTHSYS 189: *Field Studies in Earth Systems*. This field-based course focuses on the components and processes by which terrestrial ecosystems function. Led by several Stanford professors, students



study topics including biology, chemistry, ecology, geology, and soil science.

Field-based education is a cornerstone of undergraduate education in the School of Earth Sciences. The experiences students gain in the field and the camaraderie that is developed with both faculty and other students often prove to be the most memorable experiences of undergraduate education. The School of Earth Sciences is grateful for an anonymous gift in support of undergraduate field trips, and to John and Diane Leede for establishing a fund in support of field research and education for undergraduates.

Short video of students and faculty in the field at <http://earthsci.stanford.edu/alumni/video.php>

*Death Valley field trip*

### Matthew Coble

*(continued from page 2)*

While working in Menlo Park, California, Matthew was accepted into the doctoral program at Stanford University working with Professor Gail Mahood in the field of volcanology. Matthew focuses his doctoral research on the timing, geology, and geochemistry of silicic calderas in northwest Nevada. These volcanic rocks have been interpreted to be the products of initial impingement of the Yellowstone hotspot. Preliminary results from his work have shown that this 16.5 to 15.5 million year old pulse of magmatism was significantly larger and occurred much more rapidly than previously appreciated. To better quantify the timing of volcanism in northwest Nevada, he has been working with Professor Marty Grove at Stanford, and Dr. Andrew Calvert at the USGS to develop a new argon gas standard for  $40\text{Ar}/39\text{Ar}$  analyses for the Noblesse multi-collector mass spectrometers. This work will help improve the precision of  $40\text{Ar}/39\text{Ar}$  analyses, and help better constrain the ages of the rapidly erupted volcanic rocks in NW Nevada.

2010 will mark the 25th anniversary of the Stanford-USGS Fellowship. Watch for a "save the date" postcard with details about an event commemorating the occasion.



*Top, left to right: Cynthia Avery Olson (BS '64), Rosalind Tuthill Helz (AB '65), and Judy Terry Smith (MS '64, PhD '68), the first women allowed to take Stanford's summer geology class in 1964.*

*Above, left to right: Rosalind, Cynthia, and Judy in 2008.*

## \$10 Million Gift for Environmental Program

by Louis Bergeron, *Stanford Report*

DAN EMMETT, '61, and his wife, Rae, have endowed the Interdisciplinary Program in Environment and Resources (IPER) with a \$10 million gift through their Emmett Foundation.

"We are very grateful to the Emmetts for their support, especially in such difficult economic times," said program director Peter Vitousek, the Clifford G. Morrison Professor in Population and Resource Studies. "Their generosity is a giant step toward ensuring the long-term sustainability of the program."

In honor of the couple's support, the program has been renamed the Emmett Interdisciplinary Program in Environment and Resources.

The guiding philosophy of the program is that those who would lead the way in addressing the increasingly complex global problems now threatening the environment must be trained in and across a variety of disciplines to be effective. The program is administered by the School of Earth Sciences, and faculty from all seven schools at Stanford are involved.

Students focus on at least two traditional disciplines in creating their own hybrid programs of study and research for a doctoral degree. A joint master's degree is also available for students enrolled in the schools of law, medicine, or business. At present, there are approximately 30 doctoral students in the program and a growing number of students pursuing master's degrees.

"The most important thing was the fact that the program worked across disciplines, which I think is immensely important in all fields, but especially in seeking environmental solutions," said Dan Emmett, in reflecting on why he and Rae chose to make the gift. "Having visited IPER a number of times, we were really inspired by the quality of students and their enthusiasm and passion for making a difference."

Since its inception in 2001, the program has been dependent on "soft money," and the tenuous nature of the program's funding was part of the reason the Emmetts felt they wanted to endow it.

"In economic times like these, when the school is on a little leaner fare, people need to step up and support programs like this," Emmett said.

Emmett is chairman of the board of directors of Douglas Emmett Inc., a company that owns and operates commercial and residential real estate properties. He has served on the board of directors of numerous environmental organizations. He was an adviser to Governor Arnold Schwarzenegger's Green Building Initiative and still serves on a



*The Yang and Yamazaki Environment and Energy Building, home to the Emmett Interdisciplinary Program in Environment and Resources and the Precourt Institute for Energy, among other programs*

committee monitoring the progress of the state government in achieving the energy conservation goals set forth in the governor's 2004 executive order. He is also a member of the advisory council for Stanford's Woods Institute for the Environment.

Emmett graduated from Stanford in 1961 with a bachelor's degree in history and from Harvard Law *(continued on page 5)*

*"We are very grateful to the Emmetts for their support, especially in such difficult economic times...their generosity is a giant step toward ensuring the long-term sustainability of the program."*

Peter Vitousek, Director, Emmett Interdisciplinary Program in Environment and Resources, and Clifford G. Morrison Professor in Population and Resource Studies

## Stanford Launches Initiative to Tackle Energy Issues

### *Stanford Report*

RECOGNIZING THAT ENERGY is at the heart of many of the world's tribulations—economic, environmental, and political—Stanford established a \$100 million research institute to focus intently on energy issues. Lynn Orr, BS '69, energy resources engineering professor and former dean of the School of Earth Sciences, is overall director of the new institute, which will function as an independent laboratory reporting to the dean of research.

The institute is being brought to life through the generosity of founding donors Jay Precourt, BS '59, MS '60, and the husband-and-wife team of Thomas Steyer, MBA '83, and Kat Taylor, JD '86, MBA '86. Precourt is an energy executive; Steyer is a Stanford trustee and managing partner of Farallon Capital Management, and Taylor is active in a variety of public benefit and philanthropic ventures. They are all Stanford alumni. Other donors include Douglas Kimmelman, senior partner, Energy Capital Partners; Michael Ruffatto, AB '68, president, North American Power Group Ltd.; and the Schmidt Family Foundation.

The \$100 million in new funds will enable the hiring of additional faculty and support new graduate students, in addition to the more than \$30 million in yearly funding

now spent on energy research. The new Precourt Institute for Energy will draw on deep scientific expertise from across the campus and around the world. From the minuscule—materials scientists prying loose more electricity from sunshine through more efficient photovoltaic cells—to the national effort to develop sustainable energy and the global search for ways to reduce atmospheric levels of carbon, the new institute will be at the forefront.

“The biggest renewable resource is the sun,” said Professor Orr, “but we need to lower the cost of converting sunlight into electricity and supplying it through a much improved electric grid. The new center will allow us to expand significantly our effort to develop new nanostructured materials for solar energy and energy storage and to work on the host of social, market, and policy issues involved in the needed transition to energy systems with significant fractions of renewables.”

Professor Orr has been the director of Stanford's Global Climate and Energy Project (GCEP), where researchers are involved in more than 40 research projects to find ways to reduce greenhouse gas emissions associated with energy. GCEP's research portfolio includes the science of materials used to convert solar energy to electricity, biomass energy conversions, advanced batteries, fuel cells, advanced combustion, and carbon capture and storage.

GCEP, launched in 2002, will become a part of the new institute, as will the two-year-old Precourt Center for Energy Efficiency, an organization dedicated to finding ways to wring more energy *(continued on page 9)*



*Stanford President John Hennessy and Professor Lynn Orr at the press conference announcing the creation of the Precourt Institute for Energy.*

*“The big question—how to provide for energy needs while protecting the planet—is just the sort of challenge that Stanford “should attack with all the intellectual horsepower we can muster,” Orr said.*

## Environmental Program

*(continued from page 4)*

School in 1964. He worked as a lawyer in Malawi and Indonesia, as well as in Los Angeles, before founding his real estate company in 1971.

An avid outdoorsman, Emmett grew up in various rural realms of California—Alpine and Ventura counties and the San Joaquin Valley—which he credits with stimulating his interest in the environment.

“I spent virtually all my time in the outdoors because that was really all there was,” he recalled. “And I guess that is

the source for my appreciation for the outdoors, the special wild places that exist and the importance of maintaining them.”

Emmett credits their son Daniel's early interest in conservation issues with accelerating his own interest and involvement. Daniel, the oldest of their four children, graduated from Stanford in 1996 with a master's degree in international development policy from the Food Research Institute. He is now executive director of Energy Independence Now, a nonprofit organization working to promote clean, renewable energy in California.



*Gregory Beroza, Wayne Loel Professor*

## Two Faculty Members Named to Endowed Professorships

TWO STANFORD EARTH Sciences faculty members were recently appointed to endowed chairs: Greg Beroza was named to the Wayne Loel Professorship, previously held by Professor Emeritus Amos Nur; and Lou Durlafsky was named to the Otto N. Miller Professorship, previously held by Professor Emeritus Khalid Aziz.

**Gregory Beroza** is a professor of geophysics, and has served as chair of the department since 2008. He uses seismograms—recordings of seismic waves—to study how earthquakes work. Professor Beroza is concerned with understanding earthquakes well enough to predict their behavior, including when and where large earthquakes will occur and how big they will become, by studying the factors that control earthquake initiation, rupture, and arrest. He has a longstanding interest in anomalous, slow earthquakes, including deep, non-volcanic tremor. He also works on more immediately practical concerns, such as how intense shaking is close to very large earthquakes.

The Loel Professorship was established in 1984 by a bequest from the estates of Wayne and Roberta Barker Loel. Mr. Loel enrolled at Stanford in 1912 and, although he intended to major in electrical engineering, he switched to geology after taking an inspiring course from the legendary John C. Branner, Stanford’s first professor and second president. Mr. Loel’s choice of geology had a profound effect on his life: After receiving his bachelor’s degree in 1916 and master’s in 1917, he spent nearly half a century as a consulting geologist and petroleum engineer. During his career, he held the presidencies of Burnoel Petroleum Company, Winston Copper Company, and Winston Minerals Corporation.

During the 1930s Mr. Loel inferred the oil-producing potential of an area in the eastern Ventura basin in Los Angeles County. He leased the land, which later became the Oak Canyon oil field. By 1981, it had produced 13 million barrels of oil.

Mr. Loel’s accomplishments ranged far beyond his own profession. With pioneer aviator Sherman Fairchild, he worked on

the development of aerial photography. The methodology was crude: Fairchild cut a hole in the bottom of his plane so that Loel could lie on his stomach and point a Speed Graphic camera through the hole. Although the results from their early efforts were disappointing, Mr. Fairchild went on to found a successful aerial survey company.

Paleontology was another of Mr. Loel’s interests. He studied the megafauna of the lower Miocene in California and, in 1932, coauthored with William Corey, *The Vaqueros Formation, Lower Miocene of California*, published by the University of California and considered a classic.

**Louis Durlafsky** is a professor in the Department of Energy Resources Engineering and has been chair of the department since 2006. His research is in the general area of oil reservoir simulation and focuses on the development of computational approaches for subsurface flow modeling and optimization. His specific interests include computational upscaling (the development of flow simulation models from detailed geological descriptions), modeling of advanced wells, flow in fractured systems, and geological carbon sequestration. Additional topics of interest are optimization of reservoir performance, reduced-order modeling, and parameter estimation (history matching).

The Miller Professorship was established by Standard Oil Company of California (now Chevron) in 1980 and named in honor of its former chairman and CEO, Otto N. Miller. In establishing the chair, Standard Oil recognized Miller’s longstanding and productive association with the company’s exploration and production operations. Substantial growth in corporate hydrocarbon reserves and production rates occurred during his chairmanship.

Miller was born in Harlan, Iowa, in 1909 and educated at Iowa State College (BS ’30) and the University of Michigan (MS ’33, PhD ’34). He joined Standard Oil of California in 1934 and was associated with its Arabian operations from 1941 to 1943. Assigned to New York in 1943 as chief process engineer of the Arabian American Oil Company, he

*(continued on page 7)*



*Louis Durlafsky, Otto N. Miller Professor*

## Marcia McNutt, Stanford Earth Sciences Professor of Geophysics, to be nominated by President Obama to head U.S. Geological Survey

by Louis Bergeron, *Stanford Report*

PRESIDENT BARACK OBAMA announced Thursday, July 9, that he intends to nominate Marcia McNutt, professor of geophysics at Stanford, to be the director of the U.S. Geological Survey (USGS) and Science Advisor to the Secretary of the Interior.

“It is a distinct honor to be asked by the President to serve his administration, especially given the high caliber of science appointments already made,” said McNutt in a prepared statement. “Scientific information from the U.S. Geological Survey is crucial to solving the most important problems facing society: finding sufficient supplies of fresh water and clean energy, and providing accurate information that allows citizens to prepare intelligently for climate change. I look forward to leading such a respected institution at this critical time.”

McNutt joined the Stanford faculty in 1998. Since 1997 she has been the president and chief executive officer of the Monterey Bay Aquarium Research Institute.

“We are all extremely pleased with the choice,” said Pamela Matson, dean of the School of Earth Sciences. “Marcia has been a leader of the scientific community for decades. She’s a wonderful person, both in terms of the depth of her own scientific knowledge and the breadth of her understanding of the range of disciplines



*Marcia McNutt, geophysics professor, Stanford School of Earth Sciences; president and CEO, Monterey Bay Aquarium Research Institute*

that are needed in the USGS. I’m excited. I think it’s an excellent choice.”

McNutt’s biography includes a broad range of research interests, as well as numerous honors and awards. Her research ranges from studies of ocean island volcanism in French Polynesia, to continental break-up in the western United States, to uplift of the Tibet Plateau. She has participated in 15 major oceanographic expeditions, and served as chief scientist on more than half of those voyages.

*“Marcia has been a leader of the scientific community for decades...in terms of the depth of her own scientific knowledge and the breadth of her understanding of the range of disciplines that are needed in the USGS...I think it’s an excellent choice.”*

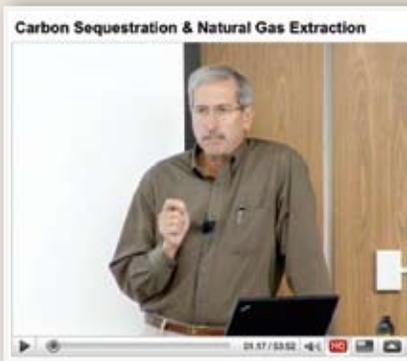
*Pamela A. Matson, Chester Naramore Dean, School of Earth Sciences, and Richard and Rhoda Goldman Professor of Environmental Studies*

### Endowed Professorships

*(continued from page 6)*

played a key role in planning and designing the Ras Tanura refinery in Saudi Arabia. After holding several other management positions, he was elected president in 1961 and served in that capacity until 1965. He was chairman of the board and CEO from 1966 until his retirement in 1974.

Miller served as a director of the United Nations Association of the United States, the California Chamber of Commerce, and the American Petroleum Institute, which he chaired in 1970-71. He lived in San Francisco until his death in 1988. He was a director of the San Francisco Opera, a member of the Board of Governors of the San Francisco Symphony, and a trustee of Grace Cathedral and of Children’s Hospital of San Francisco.



## STANFORD EARTH SCIENCES FACULTY ON YOUTUBE.COM

Mark Zoback, geophysics professor, discussed how coupling unconventional natural gas sources with advances in carbon sequestration may help with the transition away from fossil fuels at a recent Woods Institute for the Environment Energy Seminar. Follow the link at <http://news.stanford.edu/news/2009/july22/videos/569.html> to view the full lecture on youtube.com.



## STANFORD EARTH SCIENCES FACULTY IN THE NEWS

Roland Horne, energy resources engineering professor, talks to ABC7NEWS.COM about geothermal energy getting a boost from nanotechnology.

Watch here: <http://abclocal.go.com/kgo/video?id=6889459>

## Stanford's Woods Institute Awards New Round of Environmental Venture Projects

by Mark Shwartz

THE WOODS INSTITUTE for the Environment awarded four new Environmental Venture Projects (EVP) grants for interdisciplinary research aimed at finding practical solutions promoting global sustainability. Four Stanford University faculty teams will receive a total of \$791,692 over the next two years to tackle environmental challenges. Two of the research groups funded include Stanford Earth Sciences faculty members.

*An Interdisciplinary Approach to Understanding the Role of Anthropogenic Fire in the Desert Grasslands of Australia.* Page Chamberlain (*Environmental Earth System Science*) and Kate Maher (*Geological and Environmental Sciences*) of the School of Earth Sciences, along with Douglas Bird, Rebecca Bird, and James Holland of Anthropology, and Tadashi Fukami of Biology.

Intentional burning is increasingly being recognized as an important force in shaping ecosystems over time. In Australia, the impact of anthropogenic fire has been particularly significant, with indigenous burning hypothesized to have radically altered the continent's biogeography. This project will investigate temporal and spatial

variability in fire, resource management, and habitat modification in Australia's Western Desert. Examining how these practices have changed may better inform models of fire management in arid regions throughout the world.

*Northern California Water Supply: Meadow Restoration for Adaptation to Climate Change:* Steven Gorelick (*Environmental Earth System Science*) of the School of Earth Sciences, and Gretchen Daily of Biology.

In an average year in Northern California, the Feather River watershed provides flow equal to 40 percent of reservoir storage in the State Water Project system, which supplies water to 20 million people and 660,000 acres of irrigated farmland. At the headwaters of the watershed are mountain meadows that buffer floodwaters and store and release groundwater, but over the past 150 years virtually all of the meadows have dried up due to human activities. Using airborne and satellite remote sensing, field data analysis, and ecosystem service modeling, researchers will evaluate meadow restoration as an effective adaptation tool to combat climate change, develop a method to screen meadows as candidates for restoration, and quantify changes in ecosystem services.

## 2009 A. J. Horn Lecture

A DISTINGUISHED PANEL of experts—including Louis Durlowski, Margot Gerritsen, Roland Horne, and Jennifer Wilcox, all of the School of Earth Sciences—discussed many of the issues and challenges we face on the way to a new energy future during the 2009 A. J. Horn Lecture, "Fueling the Future." An audio recording of the lecture is available at <http://pangea.stanford.edu/eslectures/index.php>.

The A. J. Horn Lecture commemorates the late professor Alvah J. Horn, who taught one of Stanford's most popular courses in the 1980s—PE103, *Survey of the Energy Industries*. More than 5,000 students took the course during the 14 years that it was offered. Professor Horn graduated from Stanford in 1939 with a degree in chemistry.



Before joining the Stanford faculty, he was assistant general manager of the producing department of Standard Oil of California (Chevron). On his retirement in 1989, friends, colleagues, and former students established the A. J. Horn Lecture on U.S. Energy Production and Consumption. The inaugural speaker was Daniel Yergin, author of *The Prize: Oil and World Politics After the Gulf Crisis*. Professor Horn died in 1999.



*Resistivity probes installed in the base of Harkins Slough Pond, Watsonville, California. The probes are used to monitor the infiltration of water during the winter months when the pond is filled.*

## GEM Center

THE CENTER FOR Groundwater Evaluation and Management (GEM) launched a Web site with information about research projects under way by Stanford faculty and students, affiliated faculty, and collaborators in the public and private sectors. Stanford Earth Sciences professors Rosemary Knight, PhD '85, and Jef Caers, and civil and environmental engineering professor Peter Kitanidis lead the center.

The GEM Center is a research center that provides a multidisciplinary/crosscutting approach to groundwater evaluation and management. The focus of research is the integration of data, acquired across a wide range of spatial and temporal scales, to monitor and model subsurface hydrologic processes. The defining characteristic of

the GEM Center is the use of geophysical data as an essential part of all aspects of groundwater evaluation and management. Central to the center's approach is the establishment of partnerships that allow the GEM Center to demonstrate state-of-the-science solutions to real-world problems and, consequently, to play a key role in encouraging the adoption of new approaches and new technologies for addressing the challenging problems in the evaluation and management of groundwater resources. Schlumberger Water Services is the founding sponsor of the GEM Center.

<http://gemcenter.stanford.edu/dev/index.html>

*Sixth grade teacher examines a foam model of faulting.*



## Precourt Institute for Energy

*(continued from page 5)*

savings out of buildings, cars, the electricity grid and basic human behavior.

The Precourt Institute for Energy will be housed in the Jerry Yang and Akiko Yamazaki Environment and Energy Building, commonly known as Y2E2, a structure that showcases green construction. "It uses about half the energy of a typical Stanford lab building and 90 percent less water," Orr said. The Precourt researchers will share the building with Stanford's Woods Institute for the Environment, a campus-wide hub for interdisciplinary research, education, and action on the environment and sustainability.

The big question—how to provide for energy needs while protecting the planet—is just the sort of challenge that Stanford "should attack with all the intellectual horsepower we can muster," Orr said.

Seed funding to push forward research into new ideas will be available soon. "Stanford

faculty and students are brimming with ideas that, with some initial support, can be brought to the point that external support can be obtained," Orr said.

On the main campus, the multidisciplinary effort will involve faculty from earth sciences, engineering, and humanities and sciences, along with the Program on Energy and Sustainable Development in the Freeman Spogli Institute for International Studies. Researchers from the SLAC National Accelerator Laboratory will join in, as well, through the Stanford Institute for Materials and Energy Science, a collaboration between Stanford and the U.S. Department of Energy. The institute also will work with departments and teaching programs to coordinate an improved undergraduate and graduate energy curriculum across the university. Seven or eight new faculty positions will be created, as well as fellowships to attract the brightest graduate students and postdoctoral scholars from around the world.

## TEACHER WORKSHOPS

Stanford Earth Sciences offered two teacher workshops in July 2009, with 38 teachers participating from 36 schools. Led by Dr. Jennifer Saltzman, SES outreach coordinator, participating teachers interacted with scientists and students in the laboratory, the classroom, and in the field. Participating teachers came from as far away as Bangkok, Thailand and Washington State, and from as nearby as Redwood City and Los Altos. In the sixth grade workshop, "Geoscape Bay Area," teachers learned about geology, water, energy, coastal ocean, and ecosystem services through the lens of the San Francisco Bay Area. High school teachers learned about the chemistry, biology, and geology of mercury in the environment. Teachers leave the workshops with materials they can use to bring earth sciences research into their classrooms. Both workshops were funded in part by the National Science Foundation-sponsored Environmental Molecular Science Institute.

## *Journey to Where it Began*

by James Moore, '51

In August of 2009, Jim Moore (emeritus geologist, U.S. Geological Survey)

and Cliff Hopson (professor emeritus, University of California, Santa Barbara),

both of the class of '51, revisited the site of a field camp in the High Sierra where they last worked in the summer of 1957.

They traveled two days on horseback to reach the site at Woods Lake at 10,700 ft. elevation. The trail was rocky, long, and hard but revealed a stunning glacial landscape of almost continuous outcrop where the dominant whitish granite is cut by hundreds of dark basalt dikes. Cliff and Jim mapped this region 52 years ago as part of the geologic mapping of the Mt. Pinchot 15-minute quadrangle straddling the Sierra Crest north of Mt. Whitney.

Arguments around the campfire raged long into the night about the geology back then. The dikes provided the key to separating discrete older granitic masses of a few miles in size (plutons) that were cut by the dikes, from similar-looking younger plutons that truncate the dikes. Continued work expanded the mapped extent of the dike swarm through the entire quadrangle, then southeastward across Owens Valley and into the Inyo

*(continued on page 11)*

## Class Notes

*(Alumni with multiple degrees are listed under their first degree year.)*

### 1930

**Mary Kennedy** AB '30 celebrated her 100th birthday in July 2009. Our best wishes!

### 1938

**Jay Glenn Marks** AB '38, AM '41, PhD '51 resides in the Englewood Meridian retirement community in Colorado, where he plays golf and informs his fellow residents about interesting geological events.

### 1946

**Marion C. G. Webb** BS '46 Physical Science reports that her family owns an old oil property in Los Angeles county that is currently being explored for deep drilling prospects.

### 1947

**Rebecca Larsen** AB '47 has been retired from USGS since 1990; she has lived in the same home since 1955!

### 1952

**Abdul Samad Saleem** BS '52, MS '54 sent a copy of his compilation titled *Fundamentals of Natural Sciences in the Holy Qur'an* to Branner Library for interested students.

### 1953

**Alan Charles Ambler** MS '53 fondly remembers his time in the School of Mineral Sciences when Charles F. Park, Jr. was head of the department. He notes that this will be the 55th reunion year for his fellow colleagues: **Joseph R. DiSano** BS '54, MS '55; **Harold Hollister** BS '53, MS '54; **Urie McCleary, Jr.** BS '53, MS '54; **Allen H. Rubbert** BS '53, MS '54; and **William Black Stevenson** BS '54, MBA '63. We hope you all make it back for Reunion Weekend.

### 1955

**William Nelson Gillespie** MS '55 is the second of three generations of SES alums in the oil patch. Bill is in between father Bart Gillespie (Geology '18, in WWI for two years and thus received his degree in '20) and son Blake (MS '87). He also wrote "Please keep Bob Lindblom in line!" We'll try!

**Siegfried Hamann**, MS '55 is retired and lives in Huntington Beach, California. He worked as development geologist in the Saticoy, Santa Clara, and Ventura oil fields in Southern California. International assignments include work in Peru, Venezuela Indonesia, Thailand, and the North Sea. His eight children—seven boys and one girl—are all university graduates (two geologists). His wife, Elsa, and the 17 grandchildren are doing well.

### 1958

Our congratulations to **Keith A. Kvenvolden**, MS '58, PhD '61 who received a Lifetime Achievement Award at the Sixth International Conference on Gas Hydrates 2008 for his contribution to the study of marine gas hydrates. His work on the organic geochemistry of gas hydrate systems throughout the world set the foundation for our understanding of the role of gas hydrates play in the earth's natural system.

## 1959

**Mary Alice Carswell** '59 (5 qtrs) and her husband are traveling; within the last year they have been to Yucatan, Mexico; Copenhagen (to visit their son and family); Syria; Jordan; Vietnam; and Cambodia.

## 1961

**Robert "Skip" McAfee** MS '61 is the editor of *The Dickson Baseball Dictionary*, published 2009 by W.W. Norton. There were a staggering 10,864 terms defined.

## 1964

*Roadside Geology of Minnesota* by **Richard W. Ojakanga** PhD '64 will be published in September 2009 by Mountain Press, Missoula, Montana.

[www.amazon.com/Roadside-Geology-Minnesota/dp/0878425624/ref=ntt\\_at\\_ep\\_dpt\\_2](http://www.amazon.com/Roadside-Geology-Minnesota/dp/0878425624/ref=ntt_at_ep_dpt_2)

## 1967

**Harry McDougal Parker** BS '67, MS '74, PhD '75 wrote to make an impassioned plea for the field camp. We're glad to report that we're making great strides and even in this difficult financial climate, Stanford field work is a priority for the school.

## 1968

**Carlos E. Aspillera** MS '68 is involved in a project evaluating a magnetic sands beach deposit which is wholly magnetite. The associated minerals commonly found in beach deposit are minimal in this prospect. He says, "I have been an alluvial engineer for over forty years in the recovery of gold, platinum, and cassiterite (tin), but magnetic sands is something new to me."

Congratulations to **John Randolph Sumner** MS '68, PhD '71 who received the best paper in geophysics award at the SEG convention in September 2008. The work was in coupeld waves between a controlled electrical signal input and a mode conversion to seismic as the response. He writes, "I am mostly involved with teaching classes for the industry, which gives me a hand in what is going on but also time to play with the grandkids!"

## 1971

**John David Beaulieu** PhD '71 is now retired. His career included stints as an assistant professor at the University of Oregon, followed by slots at the Oregon Department of Geology and Mineral Industries as geological mapper, hazards geologist, deputy director, and state geologist. He was part of a U.S./U.N. team to advise Japan after the Kobe earthquake.

## 1972

**James Trafton Gutmann** PhD '72 retired after decades of teaching in the Department of Earth & Environmental Sciences at Wesleyan University in Middletown, Connecticut. However, he continues research on the Pinacate volcanic field in northwestern Sonora, Mexico, work that began while doing his doctorate at Stanford under Dick Jahns in the late '60s.

## 1974

**Daniel B. Stephens** MS '74 Our environmental and water resources consulting firm is celebrating its 25th year in business! And, my wife, Deborah, and I celebrated our 33rd wedding anniversary this year! Life is good!

## Journey

*(continued from page 10)*

Mountains. They traced the dikes

for 140 km and named them the Independence Dike Swarm in a 1961 publication. Subsequent radiometric dating placed the dike age at 148 million years ago (late Jurassic).

Since then, subsequent workers found the swarm extends 600 km—the largest dike swarm in the western United States. It clearly separates abundant granitic plutons of a Cretaceous magmatic arc from the older plutons of a Jurassic arc. Offset of the dike swarm reveals 90 km of left-lateral displacement by the Garlock Fault and several kilometers of right-lateral displacement by the Owens Valley fault.

For four days on this trip the geologists revived rich memories, inspected the rock, and made the cliffs of the Sierra crest echo with the ring of their hammers. The discussions and debates of a half-century ago raged again in camp between the two octogenarians. This time they had to consider plate tectonic theory, which had not yet been proposed at the time of their last visit. Both scientists thanked the gods of the mountains for the opportunity to once again visit this magical, inspiring place.

## Farewells

**William R. Evitt**, professor emeritus of geology, passed away on March 22, 2009 after a lengthy illness. Professor Evitt was an internationally recognized specialist in the study of fossil dinoflagellates, an important group of marine and non-marine phytoplankton abundant in both the modern and ancient ocean. His pioneering research included the naming and study of acritarchs, primitive phytoplankton that appeared much earlier than the dinoflagellates and that include some of the oldest known marine microfossils. Professor Evitt's research had an important and lasting impact on the petroleum industry as well as our understanding of early marine life. He joined the Department of Geology in 1962 and retired in 1986. Professor Evitt taught highly regarded courses in invertebrate and vertebrate paleontology along with graduate courses and seminars in his specialty of palynology. His teaching style was lively, highly organized, and accompanied by remarkable chalk drawings of the fossils he thoroughly enjoyed describing.

**William H. Mannon** BS '43, passed away peacefully on June 16, 2009 at his home in Los Angeles. He was born in New York City on July 18, 1921 and moved to Los Angeles with his mother and father in 1926, where he made his home for the rest of his life. He graduated from Los Angeles High School in 1939 and went to Stanford University on a football scholarship graduating with a degree in geology. While at Stanford he was a member of the DKE Fraternity and played three years of Varsity Football and Rugby. He was member of the 1940-41 Stanford football team that defeated Nebraska in the Rose Bowl. After graduating from Stanford, he entered the U.S. Navy and was a naval aviator with Air Group 18 as a *(continued on page 13)*

## 1975

**Steve Chicoine** ENG '75 I am currently marketing two young adult novels and a screenplay treatment, and I am in the process of writing a faith-based memoir on my experiences of the past ten years. I am working as COO of an Austin, Texas based startup, which we sincerely believe will revolutionize the sound of music—live in concert and also on home entertainment systems. The technology aside, the branding and Web-based marketing to be launched this fall is going to be very exciting.

Following successful gold mine production at El Chanate in Sonora, Mexico, **Roger Austin Newell** PhD '75 is now working to make a new gold in Tanzania.

**Jan Bauder Thornburg** BS '75, MS '76 returned to the geologic work force in February 2009. She loves her job with Nautilus, a U.K.-based company that provides training for geoscientists and engineers in the petroleum industry. Her part-time work schedule allows Janet to have ample time with her 14-year-old daughter, Laurel.

## 1978

**Dorothy Lynis Fisher** BS '78, MS '84 has been working in the sustainability field now for more than 10 years and specializes in sustainability and environmental management system implementation and training. She writes, "It is great to see it catching on." She and husband, Tom ('77 geology) love to get out into the mountains backpacking.

## 1979

**Joseph Patrick Ash** BS '79 is now the senior vice president - international for Devon Energy. He and his wife Delvin Cahen (BA '79) have been married for 19 years and live in The Woodlands, Texas where they enjoy their two teenage kids.

**George R. Steinmetz** BS '79 was featured with his beautiful photography in a past issue of Stanford Magazine (you can see his photographs at <http://www.stanfordalumni.org/news/magazine/2009/janfeb/features/steinmetz.html>)

## 1981

**Chris Morton** MS '81 checked in for the first time in 25 years! He's in his 9th year working for Thomson/Reuters based in Minneapolis, Minnesota. His daughter, Kate, has just finished her first year at Stanford. He welcomes hearing from anyone who was in GP back then!

## 1984

**Bruce Hill** PhD '84 Connected with Earth Sciences alums **Heather Boek**, MS '84, PhD '89, and **Carl Ponader**, PhD '88, at Corning recently. Working on geologic carbon sequestration and climate change issues. Friends, please get in touch on Facebook.

**Sharon Marie Reishus** BS '84 is the chairman of the Maine Public Utilities Commission (MPUC), named to the post by Governor Baldacci in May 2008 after having served five years as a commissioner at the MPUC. She is also a member of the board of directors of RGGI, Inc., the east coast greenhouse gas allowance trading organization. Previously, she was director of North American Power at Cambridge Energy Research Associates.

## 1986

**James V. Bent, Jr.** MS '86 I'm currently working for Chevron in Houston as business development and planning manager for Deepwater Gulf of Mexico Exploration and Projects. I'm married to Marci, another geologist, and we have three children. We enjoy travel, geology, scuba diving, cycling, skateboarding, and music.

**Todd Fitzgibbon** (6 qtr) '86 I retired this year from the USGS, where I was a “high-tech” geologist, specializing in geographic information systems for geologic maps and earth-science databases.

## 1991

**Robert Gailey** MS '91 I am a consulting hydrogeologist working out of Berkeley, California. I have the good fortune to work on interesting projects where some application of relatively recent research approaches and results is possible.

## 1995

**Cliff Charles Kalinowski** BS '95 MS '96 and wife Carrie are celebrating the birth of their daughter, Piper Kylee Kalinowski. He writes, “I’m currently using my earth systems master’s degree every day as the manager of customer care at SunPower Corporation, the world’s leading manufacturer of solar electric panels, where I am responsible for supporting our customers installing thousands of solar PV systems each year. As if enjoying our newborn daughter is not keeping us busy enough, we’re also remodeling our home in Woodside, California, just up the road from campus!”

**Alysa Michele Dale Keller** MS '95 is an attorney, practicing primarily in environmental law and water law issues in Nevada and California, with the firm Parsons Behle & Latimer, in Reno, Nevada.

## 2002

**Ms. Rebecca Chaplin-Kramer** BS '02, MS '04 Just had a baby, Jack Llewellyn Kramer, a budding field ecologist who has already accompanied me to the field several times. Finishing up my PhD in Environmental Science Policy & Management at UC Berkeley, aiming for spring of 2010. Working with fellow Stanford alum (and MacArthur Genius!) Claire Kremen on ecosystem services to agriculture.

**Trayle Venus Kulshan** MS '02 is the water, sanitation and hygiene (WASH) coordinator for Kenya for the international NGO, Action Against Hunger, a humanitarian NGO with a goal to fight against malnutrition around the world related to natural or man made crises. The principal objective of our WASH programs is to reduce mortality and morbidity due to preventable, water related diseases, like diarrhea, that are underlying causes of malnutrition (For more information see [www.actionagainsthunger.org](http://www.actionagainsthunger.org)).

## 2003

**Mary Ellen Darr McKee** '03 (1 qtr) had a traumatic brain injury in November 2002. She continues in recovery and lives at home. She has a Facebook page and enjoys hearing from all of her Stanford friends.

**Nicholas Walter Vidargas** BS '03, MS '03 was hired as 2008-10 honors attorney fellow at U.S. Environmental Protection Agency, Region 9, Office of Regional Counsel.

## 2005

**Molly Torian Meyer** BS '05, MS '05 returned to the United States in 2008 from working in Germany on vegetated green roofing. She started a vegetated green roof supply company in Chicago, called Molly Meyer LLC.

**Gianluca Valenti** MS '05 I fulfilled a PhD in energy engineering at Politecnico di Milano in 2006. Now I am an assistant professor at Politecnico di Milano in energy systems: [www.gecos.polimi.it](http://www.gecos.polimi.it).

## Farewells

*(continued from page 12)*

carrier based fighter pilot in World War II. After the war, he joined Southern California Petroleum Corporation which later became Scope Industries. Bill had extensive domestic and foreign oil industry experience in exploration, producing, and contract drilling operations. When he retired from Scope in 1986, he was a director and senior vice president responsible for Scope's oil and gas properties and its Dext Feed operations. He continued to serve Scope as a director and consultant for its oil and gas properties until 2007. Bill was also a director of Ojai Oil Company until 2007. Bill was active as a volunteer and contributor to Stanford University athletics and the School of Earth Sciences. He became a member of the Stanford Athletic Board in 1972 and chaired the board in 1974. He was also a recipient of the Stanford Athletic Board's Lifetime Achievement Award. From 1985-90 he was a member of the Petroleum Investments Committee, which benefits the School of Earth Sciences. Bill married Barbara Getz in 1948 and reared four children in Santa Monica. Barbara died in 1986 and Bill married Diana Barrott and resided with her during the winters in Brentwood, California and during the summers in Whitehall, Michigan. Bill was predeceased by his first wife, Barbara Getz Mannon (deceased 1986) and his second wife, Diana Barrott Mannon (deceased 2007). He is survived by his four children, Carolyn Mannon Haber (Don), Susan Mannon, William Mannon, Jr. (Barbara) and Douglas Mannon; his six grandchildren, Louis Haber (Elisa), Zachary Mannon, Daniel Mannon (Steffi), Samuel Haber, Travis Mannon and Ben Haber. Shortly before his death he was blessed with the birth of his first great grandchild, Sophia Maria Lagana-Haber. *(continued on page 14)*

## Farewells

(continued from page 13)

**William Moore George** BS '50, MS '51, died in a weather-related highway accident in October 2007. He earned his PhD from Yale University in 1960 where his research focused on evaporite deposits. He worked for the U.S. Geological Survey from 1960 to 1987 when he retired but maintained an active emeritus status until 1995. He was chair of the Arctic Panel of the Circum-Pacific Map Project from 1989 to 2004, and in 2000 published a geologic map of the Arctic sheet. In 1987 George became a courtesy professor of geology in the Oregon State University Department of Geosciences teaching undergraduate and graduate courses in tectonostratigraphic terranes in Oregon. He also developed an interest in Oregon terroirs; the influence of substrate on Oregon wines. A book on this topic is being finished by his colleague Gregory Jones of Ashland, Oregon. George was a fellow of the American Association for the Advancement of Science and the Geological Society of America, a member of the American Association of Petroleum Geologists, the American Geophysical Union, and an honorary life member of the National Speleological Society. He published 238 papers and a number of books and lectured on a variety of subjects. George is survived by his wife, Ellen James Moore, his children Geoffrey Moore and Leslie Coray, and his brother and fellow geologist, James.

**Andrew "Toby" Schultz** MS '80, 54, died on December 15, 2007 in Denver, Colorado after a brief illness. He was very deeply loved and will be missed by many. Toby is survived by his wife of 24 years, Betty, and his 14-year-old son, Andrew; mother, Mary Mory Schultz of Ponte Vedra Beach, Florida; and sister, Susan Schultz Tapscott (continued on page 15)

## 2007

Congratulations to **David Shelly** PhD '07, winner of the 2008 Keiiti Aki Young Scientist Award. This AGU award was established in 2008 and will be given every year to an outstanding young seismologist who is within three years of receiving his/her PhD. David Shelly is a recent Stanford graduate and is now a Mendenhall Postdoctoral Fellow at the USGS in Menlo Park. He has performed groundbreaking work in the study of deep tremor and low frequency earthquakes.

## Emeritus Faculty Notes

**Marco Einaudi** - Since retirement in 2003, I have divided my energies between geology and tropical landscaping (no, I have not taken over the family winery in Italy). I've consulted for Teck-Cominco at their Halilaga porphyry Cu-Au prospect on the Biga peninsula, Turkey, and for Antares Minerals at their Haqira porphyry Cu-Mo prospect in southern Peru. Antares CEO is John Black (MS '88). I am also a member of the Advisory Committee of Resource Venture Partners, LLC, one of whose founders is Paul Zweng (BS '80, PhD '93).

I'll be receiving the 2008 Society of Economic Geologists Penrose Gold Medal at GSA in Spokane, Washington, this October. The medal was established in 1923 to be awarded primarily in recognition of major contributions to the science through research, the profession through teaching, and the development of mineral resources through mine geology, exploration, and discovery.

My wife, Meredith, and I transfer to our Anuenue Ranch in Hana, on windward Maui, during winter and spring quarters. In the past five years, in an effort to reforest abandoned pasture land and eradicate invasive plants, I've planted 150 trees and 180 palms, most of which I've grown from seed; I now count 503 different plant species (in 81 families) on 12 acres. Thirty-four of these species are Hawaiian endemics, natives, or Polynesian introductions.

**Jim Ingle** - I officially retired on September 1, 2005. I was then "recalled to active duty" and I continue to teach GES 8, *The Oceans*, during spring and summer quarters. I have always enjoyed teaching this introductory course in oceanography, including the associated field trip to Point Reyes, California.

My ongoing research continues to be focused on the marine history and geology of Baja California, Mexico and the adjacent Gulf of California. A 2007 paper published with Paul Umhoefer and colleagues in Basin Research entitled "Transtentional fault-terminated basins: an important basin type illustrated by the Pliocene San Jose Island basin and related basins in the southern Gulf of California," provides an example of this work. I also continue to work on Neogene marine sediments here in California, including the Monterey Formation and similar units elsewhere around the Pacific Rim.

Travel after retirement has included trips to Japan, Argentina, Chile, and Mexico, along with local trips up and down the Pacific Coast and hiking in the Sierras. I have an office in the Mitchell Building and look forward to seeing alumni whenever they visit the campus. The School of Earth Sciences is a lively and stimulating place full of students and colleagues having the time of their lives as they investigate how our planet works, and I feel privileged to still be in their midst!

**Ron Lyon** - I retired (officially) from GES in 1993, but continued to teach one course a year until 2004. This was *Measurement of the Environment*, covering the application of remote sensing to the study of the condition of the environment. I have been able to retain my old office in Mitchell B05, although I now share it with George Parks and David Gordon.

One of the first fun things I took up when I retired was sailing. As an Australian who couldn't sail, I felt that such a deficiency should be corrected. I took classes from the UC Santa Cruz Extension Division,

little expecting that I would learn in Redwood City, California (aka "Mud Flats"). I qualified in due course, up to the level of sailing in San Francisco Bay, even in "Hurricane Gulch" near Alcatraz Island. In the next few years I did some group charters with other classmates, in southern Baja California, British Virgin Islands, Granada, and San Maarten in the Caribbean. As I became more proficient as a captain, I chartered 32-51 foot boats in S.F. Bay from Sausalito, California, and on the Great Barrier Reef off Queensland, Australia.

Most of my recent retirement time had been spent digitizing my slide and photo collection of the family, and preparing books of photos. Another fun aspect of retirement was that I became more available to the Stanford Alumni Association, as a faculty leader on their travel study programs. With my wife, Beth, I have led 15 such trips, mainly in South Pacific areas, but also in the Peruvian Amazon, whale watching in Baja, and in Glacier Bay in south west Alaska, plus the Eastern Mediterranean. But the real highlight for us was a two-week cruise in Tahiti and the Marquesas over the Millennium. In fact I have become sufficiently experienced in leading tours that I have arranged five trips myself, under the name of Lyon Down Safaris!

**George Thompson** - I enjoy the daily interchange of ideas with graduate students, and I'm trying to keep up with new discoveries and new techniques applied to long-standing problems. There is much to learn, and sometimes my longer and broader perspective (gray hair) can be helpful. I've also been working with Tom Parsons (PhD '92) of the U.S. Geological Survey to analyze and model the latest uplift of the Sierra Nevada summit. We have a paper in press, "Can Footwall Unloading Explain Late Cenozoic Uplift of the Sierra Nevada Crest? " The idea, applicable globally, is that normal-fault displacement bends and warps rift flanks upward, as adjoining basins drop downward.

Last autumn the Geological Society of America at the annual meeting in Houston presented me with the Penrose gold medal for distinguished achievement in the geological sciences, actually a wonderful recognition of superb students and colleagues, some of whose accomplishments rubbed off on me. In celebration, Lee Bell (PhD '77) hosted a great lunch reception for a large group of geophysics graduates working in the Houston area. My avocation is redwood forestry. I work out two days a week, pruning, planting, and weeding a 180-acre patch of timber to create a model working forest with sustainable harvests.

## Farewells

*(continued from page 14)*

of Houston, Texas. He is predeceased by his father, Andrew S. Schultz, Jr. He will also be sorely missed by his brothers- and sisters-in-law and 10 nieces and nephews. Toby was born and raised in Ithaca, New York, and graduated from Cornell University's College of Engineering in 1977; he received his master's degree from Stanford University's Department of Petroleum Engineering in 1980. He had a distinguished career as an engineer in the oil and gas industry, starting his own exploration company in 1988. Toby was most recently employed at Teton Energy Corporation as vice president of production.

## CORRECTION

In our 2008 newsletter Class Notes, we mistakenly included information pertaining to Ziad Al-Labban in an entry for Marwan Labban. Our sincere apologies for that error.



*Stanford School of Earth Sciences' four most recent deans (left to right): Franklin M. Orr, Jr. (1994-2002); W. Gary Ernst (1989-94); Pamela A. Matson (2002-present); and George A. Thompson (1987-89)*



# STANFORD

SCHOOL OF EARTH SCIENCES

Mitchell Building, Suite 101  
397 Panama Mall  
Stanford, CA 94305-2210

Presorted First Class  
U.S. Postage Paid  
Palo Alto, CA  
Permit #28

## Save the Date

*(continued from front page)*

### 2010 Events

#### FEBRUARY 11, 2010

Alumni reception\* at the NAPE  
Conference, Houston, TX

#### APRIL 12, 2010

Alumni reception\* at the American  
Association of Petroleum Geologists  
Conference, New Orleans, LA

Visit [http://pangea.stanford.edu/  
alumni/events/](http://pangea.stanford.edu/alumni/events/) for more event details.

Contact Mona Tekchandani ('96) if you  
have any questions: 650.723.2101 or  
[monalisa@stanford.edu](mailto:monalisa@stanford.edu).

\*Beverages and hors d'oeuvres  
are provided; reception dates are  
approximate and will be confirmed six  
weeks prior to each event; registration  
at conference not required.

## STAY IN TOUCH!

Let us know what you're doing now!  
Send updates and news items to  
Mona Tekchandani ('96), Director  
of Alumni Relations and the Earth  
Sciences Fund, [monalisa@stanford.edu](mailto:monalisa@stanford.edu),  
650.723.2101.

## Leading Matters...In a City Near You?

Stanford University is hosting a set of events in 20 cities stretching from London to Hong Kong.

Designed exclusively for Stanford alumni, family and friends, Leading Matters will show how the university is changing and reinventing itself.

Upcoming cities/dates include:

- Denver – 10/1/2009
- New York City – 11/14/2009
- Singapore – 1/30/2010
- Taipei – 2/1/2010
- Orange County – 3/6/2010
- Chicago – 4/17/2010
- Peninsula – 5/22/2010

Visit [www.stanfordalumni.org/leadingmatters](http://www.stanfordalumni.org/leadingmatters) for more information.

## Alumni Career Information

### We need you!

The School of Earth Sciences is successfully growing its undergraduate program. We are recruiting alums to share their career experiences with current students.

Please let us know if you would be interested in:

- Speaking on informal alumni panel/s for undergraduates
- Assisting through the Stanford Career Network (sign up at [www.stanfordalumni.org](http://www.stanfordalumni.org))
- Providing internship possibilities for undergraduate students

Contact Mona Tekchandani ('96): 650.723.2101 or [monalisa@stanford.edu](mailto:monalisa@stanford.edu).

## Our Thanks...

About one of four Stanford Earth Sciences alumni support the school annually through the Earth Sciences Fund. These very important undesignated gifts are useful well beyond their dollar value—because they are unrestricted, they can be applied to high priority projects and opportunities for which there is no other funding. The Earth Sciences Fund supports—among other things—undergraduate programs, field programs, science outreach activities, new faculty, and student activities. Our sincere thanks to all those who supported the Earth Sciences Fund in 2008-09.