

# The Earth Scientist

Photo by Geoff Shester (IPER)

Fall 2007

## Save The Date

### November

11-14: Society of Petroleum Engineers Technical Conference, Anaheim \*

### December

10-14: American Geophysical Union Conference, San Francisco \*

### January

22: First lecture in the *Troubled Waters* public lecture series

### February

7-8: NAPE Expo '08, Houston\*

19: *Troubled Waters* lecture 2

### March

11: *Troubled Waters* lecture 3

### April

8: *Troubled Waters* lecture 4

20-23: American Association of Petroleum Geologists Annual Meeting, San Antonio \*

\* Visit the School calendar (<http://earthsci.stanford.edu/calendar>) for details about Stanford Earth Sciences alumni receptions held at these events.

## A Renewed Focus on the Field Program

Gaining experience in the natural laboratory of the field is a fundamental component of an education in the Earth sciences. Many alumni look back on field experience as a defining moment in their education, or as Ben Page quipped, their “baptism by fire.” In the field, students acquire unique skills like how to read Earth history through the landscape or how to appropriately simplify the complexity of the natural world. In addition, fieldwork highlights the interdisciplinary nature of the Earth sciences.

Stanford has a strong history in training its students through fieldwork, pioneering the teaching of a summer field camp in 1903. J.C. Branner and John Newsum taught the first field geology course in the nearby Santa Cruz Mountains. For the next 92 years, interrupted only in 1944-45, the summer field camp taught students to map geology all over California and Nevada, with a few forays into Utah and Baja, Mexico. The expense of running the camp climbed, however, while student enrollments dwindled. Professor Elizabeth Miller taught the last field camp in Nevada’s Snake Range in 1995. For the next ten years, geology students received their training in field camps run by other universities.

Since then, our notion of “the field” has expanded to include a variety of multidisciplinary approaches to field-based questions and problems. Our students also now have expanded opportunities to focus on their own research over the summer. They can pursue interests in a wide spectrum of Earth sciences analysis techniques: traditional geologic mapping, the use of remote sensing to monitor land use change, or the collection and chemical analysis of soil or groundwater samples.

Despite the changing nature of field study, several things remain constant: great field study opportunities and experiences attract students to further study in the Earth sciences, and Earth sciences students often cite their time in the field as a highlight of their educational experiences. Therefore, we’ve renewed our commitment to an Earth sciences field program. Rather than completing the field requirement in one 6-8 week field camp, students may now enroll in three or more short field courses,



Students in California’s Warner Range learn mapping skills with Professor Elizabeth Miller and Undergraduate Program Coordinator Anne Egger ('01). Photo courtesy of Anne Egger.



Bailey Willis, left, with the 1919 field camp. Photo courtesy of Earth Sciences Archives

or participate in field research with a graduate student or faculty member, to learn a variety of field techniques. The coordination of these courses at the school level allows field opportunities to be offered across departments and programs, ensuring that all students in the school have options for field research. Students have produced geologic maps, collected samples for geochemical and geochronological analysis, spent five weeks on a sailboat collecting ocean data, and traveled to China to collect data for analysis of satellite imagery. Over the next year, a new field program coordinator will assess the needs and opportunities for additional courses, laying the groundwork for a comprehensive field program that meets the needs of all our students and faculty.

## The Year Ahead

I'm delighted to bring you best wishes from the School of Earth Sciences as we embark on a new academic year. This is a new publication for the school, focusing on items we think will be of particular interest to alumni: alumni news, highlights of current research, updates on the university campaign, and current educational activities.

In this issue you'll read about new faculty, a proposed new department, and a renewed focus on our field study program. Winter quarter will see some of our faculty and students in a new building, the Jerry Yang and Akiko Yamazaki Environment and Energy Building, and the 2007-08 academic year marks the fiftieth anniversary of the Department of Geophysics, started in 1957 by Professor Emeritus George Thompson.

Please let us know what you think of the newsletter, and what you'd like to read about in future issues. Mona Tekchandani ('96), our Director of Alumni Relations and the Earth Sciences Fund, and I look forward to hearing from you.



*Photo by L.A. Cicero*

**Pamela Matson**

*Chester Naramore Dean of the School of Earth Sciences  
Richard and Rhoda Goldman Professor of Environmental Studies  
Burton J. & Deedee McMurtry University Fellow in Undergraduate Education*

## Update on The Stanford Challenge

*Our goal for The Stanford Challenge is nothing short of building a university for the 21st century and beyond: A university that will better serve the world through the quality, impact, and vision of its research, and through the new generation of leaders it will produce.*

- John Hennessy



THE  
STANFORD  
CHALLENGE

The Stanford Challenge was launched last fall with an objective of raising \$4.3 billion by 2011. The School of Earth Sciences is involved in all aspects of the campaign and is helping drive progress towards a bold new vision for the university.

To date, the university has made great headway towards this goal. In October, President Hennessy announced that the campaign had topped \$3 billion, made up of 300,000 gifts of all sizes. In FY07, the School of Earth Sciences raised a new professorship, five endowed fellowships, and one expendable fellowship. Our priorities include creating a stable funding base for the Interdisciplinary Graduate Program in Environment and Resources (IPER), further developing the Center for Computational Earth and Environmental Sciences, providing more research support for our hazards group, and increasing annual discretionary support for the unrestricted Earth Sciences Fund.

You can learn more by visiting <http://earthsci.stanford.edu/support> or by contacting David Voss ('75), Associate Dean for External Relations, [david.voss@stanford.edu](mailto:david.voss@stanford.edu), 650-726-1606, or Mona Tekchandani ('96), Director of Alumni Relations and the Earth Sciences Fund, [monalisa@stanford.edu](mailto:monalisa@stanford.edu), 650-723-2101.

### **An Overview of The Stanford Challenge Themes** [thestanfordchallenge.stanford.edu](http://thestanfordchallenge.stanford.edu)

#### Seeking Solutions:

- The Initiative on Human Health
- The Initiative on the Environment and Sustainability
- The International Initiative
- Multidisciplinary Research Across the University

#### Educating Leaders

- Improving K-12 Education
- Engaging the Arts and Creativity
- Reinventing Graduate Education
- Extending the Renaissance in Undergraduate Education

#### Sustaining a Foundation of Excellence

- Core Support
- Annual Giving Across the University

## Fifty Years of Geophysics at Stanford

After witnessing the San Francisco earthquake of 1906, John Casper Branner, the first professor at Stanford and head of the geology program, became interested in seismology. During the early part of the twentieth century, he served as president of the Seismological Society of America (SSA) and encouraged the production of seismological maps. Professor Bailey Willis followed in Branner's footsteps, both as chair of geology and as president of the SSA. It was Willis who argued that seismology should be developed as a separate field of study.



*Samuel G. Taylor, Jr. (57) makes gravity observations at the Salvatore lab. Photo courtesy of Stanford Earth Sciences Archives.*

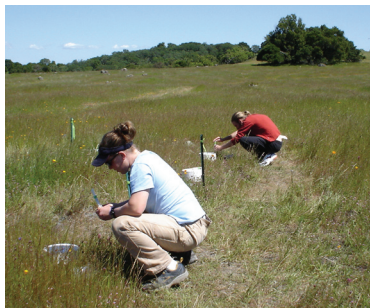
In 1947, George Thompson taught the first formal geophysics course at Stanford. This initial course grew into a field of study offering graduate degrees, with Leonard Lombardi receiving the first geophysics degree in 1953. The Department of Geophysics was formally created in the 1957-58 academic year.

Since Lombardi, there have been more than 800 graduate degrees awarded in the field of geophysics from Stanford University. These graduates have transformed the science through their work in academia, industry, and government. Not only is the Department of Geophysics still prospering, but so is George Thompson, who continues to participate in the school as an active emeritus faculty member.

## Proposal for a New Department

Global environmental change is one of the most critical challenges facing humanity. At Stanford, we are harnessing the strengths of faculty and students from across the university to address environment and sustainability challenges through research and teaching efforts. While such efforts are necessarily inter- and multi-disciplinary, we believe contributions from the School of Earth Sciences can be critically advanced through the creation of a new department, the Department of Environmental and Earth System Science.

As proposed, the Department of Environmental and Earth System Science will engage in research and teaching for an integrated, comprehensive view of Earth's land, atmosphere and water systems, with an interest in increasing understanding and providing foundations for problem solving related to sustainability. It will carry out research and train graduate and undergraduate students in the emerging fields of global environmental change and Earth system science.



*Students collecting data at Jasper Ridge Biological Preserve. Photo courtesy of Earth Systems.*

The department will encompass a range of natural science disciplines. It will be concerned primarily with processes operating on "human" timescales and moving forward in time, but because current changes in the global environmental system can only be understood in the context of long term change, analyses of paleorecords and historic change will be an essential element. While natural sciences will remain the core, the boundaries of the department will be fluid enough to include and engage scientists who focus on all aspects of natural resource and Earth system issues.

## Research Briefs

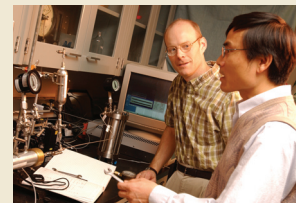
### CEES celebrates its first birthday

One year ago the Stanford Center for Computational Earth and Environmental Sciences (CEES) opened its doors to students, faculty, and researchers with the goal of expanding capacity for new Earth sciences research. Thanks to the efforts of contributors, CEES has become more than a computer facility; it has sparked innovation in research and education.

CEES currently has 130 users from across Stanford and from outside institutions like the Carnegie Institution, Sun Microsystems, 3DGeo Development, Maxeler Technologies, and the USGS. Besides hosting a number of research groups, CEES has been chosen to host the Smart Fields Consortium, a multi-disciplinary, industrial affiliates program at Stanford. In another research partnership, CEES is pairing with the Carnegie Institution Department of Global Ecology to address the problems of ocean acidification and climate change, issues associated with rising levels of greenhouse gases. To learn more, visit <http://cees.stanford.edu>.

### GCEP Update

In March, Lynn Orr, ERE professor and project director of the Global Climate and Energy Project (GCEP), recently announced a record \$15 million in awards for eight research projects and five one-year exploratory research efforts to be conducted at Stanford and a number of other institutions. Several of the activities began in September and, once all efforts are established, the total number of GCEP-supported research programs will number 42 with funding of \$61.7 million committed since the project's launch in December 2002. "GCEP is pleased to have so many outstanding, innovative researchers joining our team," said Orr.



*Professor Anthony Kouscek and researcher Tom Tang. Photo courtesy of GCEP.*

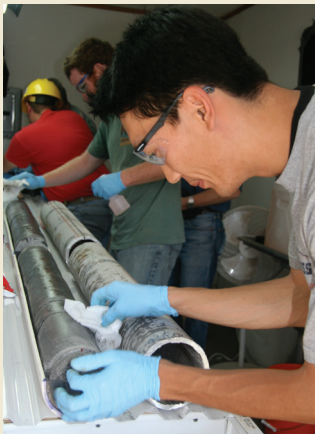
Current activities include research in solar energy, biomass energy, hydrogen, advanced combustion, CO<sub>2</sub> capture, CO<sub>2</sub> storage, advanced materials and catalysts, advanced coal, advanced transportation, and exploratory projects. To learn more, visit <http://gcep.stanford.edu>.

## Research Briefs cont'd

### Geologists recover unprecedented cores

For the first time, geologists have extracted intact rock samples from two miles beneath the surface of the San Andreas Fault. "Now we can hold the San Andreas Fault in our hands," said Mark Zoback, professor of Geophysics. "We know what it's made of. We can study how it works."

Zoback is one of three co-principal investigators of SAFOD, the San Andreas Fault Observatory at Depth. He, along with Bill Ellsworth and Steve Hickman of the US Geological Survey, has been working towards this moment for over five years. "This is tremendously exciting. Obtaining cores from the actively slipping San Andreas Fault is truly unprecedented and will allow truly transformative research and discoveries," said Kaye Shedlock, program director of EarthScope at the National Science Foundation. *Geophysics grad student Hiroki Sone cleans the first core sample retrieved from SAFOD. Photo courtesy of Clay Hamilton.*



Study of the core will begin this winter. At the drill site, an array of seismic instruments will be placed into the borehole near where many small temblors originate. Preliminary observations made in 2006 have revealed the tiniest earthquakes ever observed - so small they have negative magnitudes. To find out more information or to see current data, visit the SAFOD website, <http://safod.icdp-online.org>.

### Environmental Molecular Science Institute

We live in a world of interfaces among solids, liquids, gases, microbial organisms and plants, where most chemical and biological interactions occur in the environment. The chemical processes at these interfaces dictate such things as whether mercury can be removed from emissions of coal-fired power plants. The Stanford Molecular Environmental Science Institute (EMSI) focuses its research efforts on molecular and nano-scale chemical and

## Y2E2 is Here

If you've been on campus recently, you've probably seen the new building just north-west of Green Earth Sciences. This is the Jerry Yang and Akiko Yamazaki Environment and Energy Building, or Y2E2. Named for Yahoo! Inc. co-founder and Stanford Trustee Jerry Yang and his wife and colleague, Akiko Yamazaki, this high-performance building will use 50 percent less energy and 90 percent less water than typical buildings of similar size. Staff and students of the Earth Systems Program and the Interdisciplinary Graduate Program in Environment and Resources will be among those moving to the new facility by year-end.



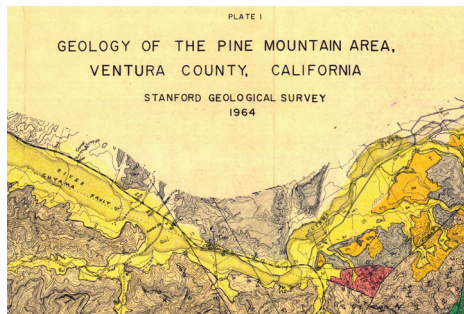
*The Y2E2 building is part of the new Science and Engineering Quad.*

The building will gather under one roof ecologists and economists, biologists and legal scholars, Earth scientists and engineers, as well as policy analysts. It will support specific projects and create a breeding ground for new collaborations. Built according to high environmental standards, the building will also showcase sustainable building practices and serve as a living laboratory for the research conducted inside. It is the first of four buildings planned for the new Science and Engineering Quad.

## Digitization Projects

### Stanford Geological Survey Online

The Stanford Geological Survey lasted for over 100 years from 1893 until 1995. During its span, hundreds of students went into the field with faculty members each summer to learn how to make maps. Detailed topographic maps were made by hand for years until the US Geological Survey 7.5 minute topographic series became readily available. Overlaid on these base maps was the geology of regions of California, Nevada, and Utah.



*Judy Terry's ('68) map of the geology of the Pine Mountain area. Courtesy of Branner Library.*

Mary Balch, in 1929, had the distinction of being the first woman to map as part of the Survey, although she was not allowed to work with the men since she was an unmarried woman. She mapped the New Almaden Mine area in south San Jose by herself. In 1964, three women were officially enrolled in the class for the first time. Herbert Hoover, Thomas Dibblee, and Benjamin Page were noted participants and the camps were lead over the years by John Casper Branner, John Flesher Newsom, Cyrus "Chief" Tolman, Jim Ingle, and Elizabeth Miller, amongst others.

Nearly all of the maps and a representative sample of the notebooks have been scanned by the staff at the Branner Earth Sciences Library. Close to 500 maps are currently available for viewing at the collection's Web site: <http://collections.stanford.edu/sgs/> and the remaining maps and notebooks will be added this academic year. As time and funding allows, additional notebooks and photographs will be scanned and added to the online collection.

Elizabeth Miller, the last director of the survey, is pleased that the materials are so readily available. "We look forward to working with Branner Library to include

all our latest project results in this great compilation that showcases the hard work and incredible energy involved in our field-based projects,” Miller said.

### Digitizing Earth Sciences Graduate Theses

Graduate degrees in the Earth sciences have been granted ever since geologist George Ashley received the first PhD conferred by Stanford University in 1894. Theses have always been available from Branner library, but a new project will soon make them available online.

The theses digitization project was started by the Department of Energy Resources Engineering (formerly Petroleum Engineering), which began making their theses available online in 2003. Following that lead, theses spanning the entire history of the school will be digitized over the next year. The project uses a robot, housed in Green Library, that can automatically scan bound materials at five times the rate of manual scanning.

After theses are digitized, they will be available, pending copyright approval from alumni, in the alumni and research sections of the School of Earth Sciences Web site (<http://earthsci.stanford.edu>).

## Alumni News

### Three SPE Presidents, three Stanford School of Earth Sciences PhDs

William M. Cobb ('71) was recently nominated to be the 2008 President of the Society of Petroleum Engineers (SPE). Cobb is the third consecutive nominee holding a PhD from the School of Earth Sciences to be named President of SPE. Preceding him is 2007 President Abdul-Jaleel Al-Khalifa ('88) and 2006 President Eve Sprunt ('77).

Cobb currently heads the petroleum consulting firm William M. Cobb & Associates, Inc. He also holds a position as adjunct professor of Petroleum Engineering at Texas A&M University. Al-Khalifa is Manager of the Reservoir Description and Simulation Department at Saudi Aramco. He also is the EAGE Distinguished Lecturer and is on the advisory board for the Stanford School of Earth Sciences and the King Fahd University of Petroleum Engineering, among other schools. Eve Sprunt is Senior Technical Advisor for Chevron Technology Ventures LLC, a subsidiary of Chevron Corp. that manages Chevron's research, venture investing, and business ventures in emerging energy technologies such as hydrogen, wind, solar, and biomass.



*Abdul-Jaleel Al-Khalifa, Eve Sprunt, and William M. Cobb. Photo courtesy of William Cobb.*

### New Alumni System

A new database is under development to help you keep in touch with your fellow Earth sciences alumni. Stanford alums have always been able to use the Stanford Alumni Association's database, but the Earth Sciences system will allow you to also add and read class notes. In addition, you'll be able to access Stanford Earth Sciences theses. The system will be available by November 1. You can use it by going to <http://earthsci.stanford.edu/alumni>.

## Research Briefs cont'd

microbiological interactions occurring at environmental interfaces and how they affect contaminants. This NSF and DOE- funded institute with 20+ investigators at seven institutions world wide is led by Professor Gordon Brown (GES).

One major research activity of the Stanford EMSI is development of structural models of hydrated metal-oxide mineral surfaces and their interface with aqueous solution. Co-PI Assistant Professor Tom Trainor ('01) at the University of Alaska, Fairbanks focuses on determining the structure of common iron-(hydr)oxide phases (hematite, goethite, and



*Tom Trainor collects field data. Photo courtesy of Tom Trainor*

magnetite) utilizing synchrotron-based surface x-ray diffraction. Iron oxides are of particular interest due to their

widespread occurrence, typically high specific surface area, and high surface reactivity, making them important scavengers of aqueous trace metals, and substrates that support the heterogeneous transformation of aqueous contaminants.

### Arsenic in the Water Supply

Quite possibly the largest environmental disaster the world has seen - affecting far more people than the accident at Chernobyl - is the arsenic contamination of ground water in Southeast Asia. Approximately 100 million people, most notably in Bangladesh, are drinking water with dangerous levels of arsenic that have migrated into the wells from natural sources in the age-old Himalayan sediments. While the source of the arsenic is known, it remains to be understood how that arsenic migrates into the water supply.

Researchers at Stanford, Boise State University, MIT, Bangladesh University, and Resource Development International have been collaborating on the question of how arsenic is released into water. Professor Scott Fendorf, a principal investigator from Stanford Earth Sciences, says their recent results indicate that arsenic is actually released near the surface via anaerobic microbiological processes and then later transported to well-depth, where it enters the water supply. Remediation, therefore,

## Research Briefs cont'd

will require monitoring the soil environments above aquifers for arsenic.

### Mass extinction provides clues to global carbon cycle changes

Approximately 250 million years ago, vast numbers of species disappeared from Earth. According to assistant professor Jonathan Payne (GES), this mass extinction may provide clues to current global carbon cycle changes. Payne, a paleobiologist, studies the Permian-Triassic extinction and the following 4 million years of global carbon cycle instability. In the July issue of the *Geological Society of America Bulletin*, Payne presented evidence that a massive, rapid release of carbon may have triggered this extinction.

Payne has spent the past five years studying the limestone fossil beds of the Great Bank of Guizhou in southern China. More than 90 percent of all marine species disappeared from the fossil record in that region 250 million years ago. An unusually long period of time passed before biological diversity began to reappear. Scientists disagree on the causes of this extinction. However, nearly all explanations cite the high levels of greenhouse gases, including carbon dioxide, low levels of oxygen in the oceans and high levels of toxic gases.

"This end-Permian extinction is beginning to look a whole lot like the world we live in right now," Payne said. "The good news, if there is good news, is that we have not yet released as much carbon into the atmosphere as would be hypothesized for the end-Permian extinction. Whether or not we get there depends largely on future policy decisions and what happens over the next couple of centuries."



In south China, Jonathan Payne searched for clues to the recovery from a 250-year-old extinction event. Photo by Robin Kodner.

### IPER's first alumni

IPER welcomed its first PhD students in the fall of 2002. As the first IPER graduates embark on their careers, their continuing commitment to facing challenging problems is evidenced by the diversity of the first positions they have chosen.

Michael Mastrandrea ('04) is a research associate in Stanford's Center for Environmental Science and Policy (CESP). His work assesses the potential impacts of climate change on a variety of vulnerable sectors, such as agriculture in Southeast Asia, and natural ecosystems. Mark Hayes ('06) is an associate in the RREEF North American Infrastructure Fund, applying his energy expertise to investments in natural gas, conventional, and renewable power. Holmes Hummel ('06) is one of only two American Association for the Advancement of Science Congressional Science and Technology Fellows working on energy policy on Capitol Hill. Joshua Goldstein ('07) is a Postdoctoral Fellow in Economics and Conservation Finance with The Natural Capital Project, a joint venture between Stanford University, The Nature Conservancy, and World Wildlife Fund.

To learn more about IPER alumni or about the research of current IPER students, please visit <http://iper.stanford.edu>.

### Stanford researchers worked with Nobel-winning Climate-Change Panel

Stanford's Stephen Schneider, Terry Root, Chris Field, Thomas Heller, John Weyant, and IPER grad Michael Mastrandrea ('04) are among the roughly 2,000 scientists and policy experts from around the world who made contributions to the United Nation's Intergovernmental Panel on Climate Change (IPCC), which shared the 2007 Nobel Peace Prize with former vice president Al Gore.

The Nobel committee awarded the prize to the IPCC and Gore "for efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measure that are needed to counteract such change."

Since its founding in 1988 in Geneva, Switzerland, the IPCC has published a series of scientific reports—the consensus of leading researchers from 120 countries—that have "created an ever-broader informed consensus about the connection between human activities and global warming," according to the Nobel citation. The reports have provided scientific legitimacy to governmental efforts to deal with climate change. A synthesis of the IPCC's Report will be available at <http://www.ipcc.ch/>.

## Environment and Energy Public Lecture Series

The Energy and Environment Public Lecture Series will continue in 2008 with *Troubled Waters*, a four-part series that will consider what water is, how it can be managed, and what its prospects are for the future. Water experts will discuss issues including pollution, droughts, floods, conservation, public health, and politics from local to international. Lecture dates are January 22, February 19, March 11, and April 8. All lectures are in Kresge Auditorium on the Stanford campus, and begin at 7:30 p.m. Lectures are free and open to the public, but seating is limited, so please arrive early. The Energy and Environment Public Lecture Series is co-sponsored by the Stanford School of Earth Sciences and the Woods Institute for the Environment. For more information, please visit [eslectures.stanford.edu](http://eslectures.stanford.edu).

## New Faces



Dr. Wendy Mao has joined Geological and Environmental Sciences as assistant professor. Mao's research interest is to understand the Earth and planetary bodies through investigations of their constituent materials. She utilizes high-pressure technology as well as new-generation synchrotron, neutron, and laser facilities to enhance knowledge of geophysics and geochemistry.



Dr. Sally Benson joined Energy Resources Engineering as professor (research) and was appointed Executive Director of the Global Climate and Energy Project. A groundwater hydrologist and reservoir engineer, Benson has conducted research in a range of areas from geothermal energy to groundwater cleanup. She will lead efforts to study mechanisms by which carbon dioxide can be trapped underground.



Dr. Jesse Lawrence has joined Geophysics as assistant professor. Lawrence's work focuses on the development of computational techniques to model the Earth's structure, addressing the structure and dynamics of the Earth's mantle, imaging of the anelastic structure of the Earth, and imaging the crust and lithosphere.



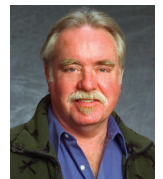
Dr. Kate Maher will join Geological and Environmental Sciences as a assistant professor. Maher employs stable isotope analyses of near-surface Earth materials in high-resolution dating of geochemical substrates. In combination with geochemical models, these data allow her to investigate paleoclimate, landscape evolution, and weathering rates.

## Faculty News

Khalid Aziz (ERE) received the Petroleum Society of Canada's Lifetime Achievement Award. The award recognizes his long service to the field of petroleum engineering.



Steve Graham (GES) received the American Association of Petroleum Geologist's Grover E. Murray Memorial Distinguished Educator Award. The award is given in recognition of distinguished contributions to geological education.



Gordon Brown (GES) received the Roebling Medal from the Mineralogical Society of America for scientific eminence as represented by scientific publication of outstanding original research in mineralogy. He also received the Patterson Medal from the Geochemical Society, awarded for an important and innovative breakthrough in environmental geochemistry considered to be of fundamental significance. In addition, he received the Hawley Medal from the Mineralogical Association of Canada, for best paper published in the *Canadian Mineralogist* in 2006, shared with his co-authors. Finally, Brown, along with co-authors, will receive the Association of Environmental and Science Professors' 2007 Outstanding Paper Award.



Roland Horne (ERE) was awarded Honorary Membership at the November SPE meeting. Honorary Membership, the highest honor SPE bestows, is conferred on individuals for outstanding service and/or in recognition of distinguished scientific or engineering achievement.

Lou Durlafsky (ERE) was awarded the Lester C. Uren Award at the Society of Petroleum Engineer's (SPE) November meeting. The award is given in recognition of distinguished achievement in the technology of petroleum engineering by a member who made the contribution before age 45.



Dean Pamela Matson received the National Resource Ecology Lab's 2007 Eminent Ecologist Award. The award is presented to an individual whose independent and interdisciplinary research has contributed to sustained, innovative syntheses and new insights in the study of ecosystems.

In a Thomson Scientific survey analyzing citation patterns in the field of geology, Juhn G. Liou was listed as the 10th most cited author over the last decade. The survey analyzed data from 224 journals and more than 150,000 published papers. Authors were ranked based on total citations.



Gary Ernst (GES) has been honored by the Geological Society of America with a book titled *Convergent Margin Terranes and Associated Regions: A Tribute to W.G. Ernst*. The compilation sheds light on the geologic record created where tectonic plates come together.

David Pollard (GES) has been elected as a Fellow of the American Geophysical Union (AGU). AGU Fellowship is a special tribute for those who have made exceptional scientific contributions, attaining acknowledged eminence in the Earth and space sciences.



## Petroleum Investments Funds Support School Projects

The Petroleum Investments Committee (PIC), a group of about 25 School of Earth Sciences alumni, manage the investment of the Petroleum Investments Funds (PIF) for the benefit of the School of Earth Sciences. Invested in producing oil and gas royalties and other energy-related assets, the PIF provide annual, discretionary income that the dean can use to further the strategic objectives of the School of Earth Sciences. The school's largest source of flexible revenue to support teaching and research, PIF principal has a current market value of about \$33 million.

Last year the PIF generated a record \$876,000 for school projects. That amount is projected to increase to over \$1 million in 2007-08, and to approximately \$1.2 million in 2008-09.

PIF income in the recent past provided the seed funding to launch the Center for Computational Earth and Environmental Sciences (<http://news-service.stanford.edu/news/2007/march21/cees-032107.html>). Currently the dean is using PIF income as start-up funding for new faculty and to develop shared analytical facilities. These new shared labs use constrained space more efficiently, and allow for better instrumentation and greater technical support for the faculty and students who use them.

For more information please visit <http://pangea.stanford.edu/support/pif/> or contact David Gordon at [dsgrordon@stanford.edu](mailto:dsgrordon@stanford.edu), 650-723-9777.

## A "Legend in Wildcatting" establishes a new endowed professorship

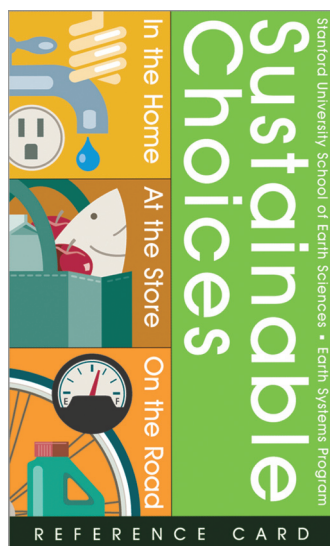
Thomas Davies Barrow ('53, Geology) and Janice Hood ('50, Political Science) Barrow have made a pledge establishing the Thomas Davies Barrow Professorship. The Barrow Professorship will be awarded to a faculty member working in the areas of energy or water resources.



*Thomas D. and Janice Barrow in their study. Photo courtesy of the Society for Exploration Geophysicists.*

Dr. Barrow, honored in 2003 as a "legend in wildcatting" by the Houston Geological Society, is a former Stanford trustee (1980-90) and a former member of the School of Earth Sciences Advisory Board (1975-88). Dr. and Mrs. Barrow are longtime Stanford volunteers. In 1984 they

established the Thomas D. and Janice H. Barrow Fellowship in Earth Sciences. Three of their four children are Stanford alumni, and Mrs. Barrow's father and sister also graduated from Stanford.



The Sustainable Choices Card contains information that can be used in the home, while shopping, and while traveling to make individual choices that will have positive impacts on the environment. The card, which folds down to wallet-size, was included in the welcome packets for all incoming freshmen this fall, and was available to alumni during Reunion Homecoming weekend. The card is available at the School of Earth Sciences or can be downloaded from the Sustainable Choices Web site, <http://sustainablechoices.stanford.edu>.

The card was created by students in the Earth Systems Program working with faculty guidance and expertise. Julie Kennedy ('92), associate director and senior lecturer in the Earth Systems Program, led the group, along with graduate student Kendall Madden ('08). Both said they were inspired by the Monterey Bay Aquarium's Seafood Watch Guide, a widely used resource that reminds consumers which choices of seafood have the least environmental impact.

In creating the Sustainable Choices Card last year, Kennedy and the students focused on making it accessible to a wide audience. Plans are already under way to make the guide available at the California Academy of Sciences in San Francisco, and Kennedy said she hopes it will soon be distributed at various other locations around the country.



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SCHOOL OF EARTH SCIENCES

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## Stay Connected

We'd love to hear from you! Please contact Mona Tekchandani ('96), Director of Alumni Relations and the Earth Sciences Fund, [monalisa@stanford.edu](mailto:monalisa@stanford.edu), 650-723-2101 and let her know what you think of the newsletter and what you'd like to read about in future issues. Stay up-to-date in the alumni section of the School of Earth Sciences Web site by visiting <http://earthsci.stanford.edu/alumni>.