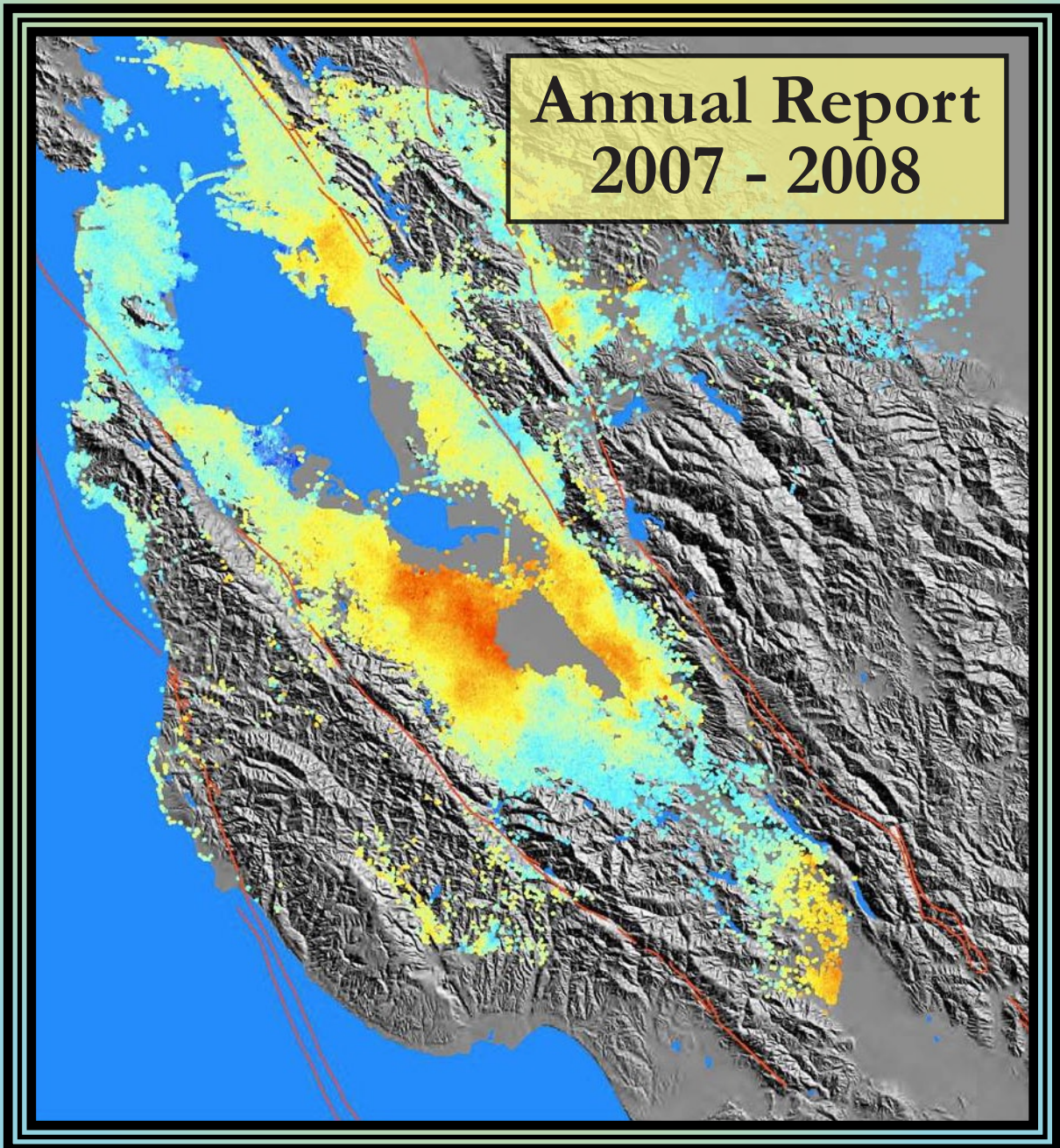


ALUMNI UPDATE

DEPARTMENT OF EARTH AND PLANETARY SCIENCE



University of California, Berkeley



Walter Alvarez receiving the Doctor Honoris Causa from the University of Oviedo, Spain.



Charles Shaw (PhD 1956) visits in October 2008.



Faculty party to celebrate Bruce Buffett joining EPS: (from left) Bill Collins, Raymond Jeanloz, Bruce Buffett, Liv Weiss, Michael Manga, Julia Wenk, Chi Wang, Milly Alvarez, Burkhard Militzer, Kasia Allen, Kristie Boering, Richard Allen, Barbara Romanowicz, Mary Jane Brimball, George Brimhall. (sitting) Jan Collins, Roland Bürgmann, Rudy Wenk and Jeni Jeanloz.

Cover photo: Uplift rates at 115,487 points in the San Francisco Bay area, California, estimated from permanent scatterer analysis of interferometric synthetic aperture radar (InSAR) measurements are shown on a gray-shaded digital elevation model. The analysis utilizes 49 data acquisitions of the European Space Agency's European Remote Sensing (ERS) satellites collected from 1992 to 2000. The contribution of tectonic horizontal motions established from GPS- measured surface motions has been removed. Uplift (red colors) and subsidence (blue colors) are due to non-tectonic (sediment settling, landsliding, aquifer withdrawal and rebound) and tectonic processes. Graphic from R. Bürgmann et al., 2006, *Geology*.

Editor: Doris Sloan
 Layout: Katie Heil
 Printers: Mercurio Bros. Printing

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THE STATE OF THE DEPARTMENT, 2007-2008

Dear Alumni and Friends,

Another year has gone by. Two big events happened: First, Bruce Buffett joined us from the University of Chicago and he will introduce himself on page 7. With him our geophysics program has taken a big leap. Second, we have a manager again. Judith Coyote is a tremendous asset and in full control of department operations. She makes life for the chair so much easier that I even find time to pursue several research projects: Experiments at the high pressure, the microfocus and the tomography beamlines at ALS have been very interesting, particularly the documentation of residual stresses in naturally deformed quartz. In Los Alamos we continue to use the HIPPO neutron diffractometer for fabric studies (right). I also got seduced into sediments again – after carbonates many years ago. This time it is anisotropy in shales, an absolutely fascinating topic. With Paulo Monteiro, a colleague in Civil Engineering, we started a big project searching for “green concrete” which is a bit like a tale out of *The Arabian Nights* (see inside back cover). And lo and behold, many years after Rich Reeder (PhD 1980) tempted me, I even had time to return to Snake Dike with Leif Karlstrom, a graduate student in geophysics.



Rudy Wenk with the HIPPO neutron diffractometer.

The Department is in great shape. In a recent survey we ranked as the most productive geoscience department in the country, which is amazing considering our small size compared e.g. to Caltech, MIT and Stanford. Faculty continue to receive prestigious awards. Walter Alvarez was awarded the Doctor Honoris Causa from the Universidad de Oviedo, Spain and in his robe he appears like a cardinal preaching extinction of the dinosaurs after a meteor impact (see inside front cover). Following up on this he received the Vetlesen Prize, considered one of the highest honors in earth sciences, also for his work on meteor impact. Raymond Jeanloz received the Hans Bethe Award from the American Federation of Scientists for his demonstration of the reliability of the U.S. nuclear stockpile in the presence of a moratorium on nuclear testing. Richard Allen was honored with the Donald Sterling Noyce Prize for excellence in undergraduate teaching. No wonder: Enrollment in EPS20 “Earthquakes in your backyard” is now exceeding 250. Concerning earthquakes, we “celebrated” on October 21 the 140-year anniversary of the Hayward fault rupture and thus our cover. Roland Bürgmann gave the inspiring Lawson Lecture on the Hayward fault to a packed audience in Bechtel Hall. But it is not just the faculty: Undergraduate EPS major Corina Cerovski-Darriau was selected U.S. student representative to the International Year of Planet Earth launch event at UNESCO in Paris in February. Currently Corina works with the AGI in Washington DC to promote earth sciences. Geophysics undergraduate Summer Ohlendorf finished second in the rowing crew Nationals. She continues PhD studies at UM Madison. On a sad note, late last year emeritus professor Davey Jones succumbed to cancer. Since his retirement in 1996 he spent life with his family in Placerville, producing the premium Lava Cap wines. His former student Russ Graymer (PhD 1992) recounts some memories (p. 10).

On Cal Day 2008 Paul Henshaw (BA 1969), George Brimhall (PhD 1972), Doris Sloan (MS 1975, PhD 1981) and others organized a 4-year reunion with speeches and a dinner at the Durant Hotel. It was nice to see so many “old” faces and realize how time has gone by. It was a different department in 1968, with Chuck Meyer, Adolf Pabst, Frank Turner, John Verhoogen and Howell Williams still around. We were fortunate to persuade Paul Henshaw to teach a course in petroleum geology, something undergraduate students urged us to do, and he is joining us as Visiting Professor. He will also be chairing our alumni committee.

Our Rock Garden display has received a lot of applause. Kent Ross continues to upgrade our hallway displays and has added an exhibit of the Melvyn Calvin rock collection (Nobel Laureate in Chemistry). With help from the Ramsden Endowment all our classrooms have been refurbished. You should come and visit us and inspect the changes. We are reaching out with our displays to the community, especially to make youngsters aware of geosciences and their opportunities. Undergraduate Josh Graham brought the Oakland Charter School to McCone Hall and alumnus Martin Trso (BA 1993) came with a teacher and second graders from the Berkeley Arts Magnet school for a tour (see photos on back cover). This was a sharp bunch of kids, asking intelligent questions about

minerals and rocks and even discovering a sample that was mislabeled.

We have again been fortunate in the generosity of our alumni. The number and value of donations continues to increase and contribute to a stimulating environment in the Department of Earth and Planetary Science, especially for students. My sincere thanks to all of you. Let me just point out a large endowment from the John E. (BA 1935) and Dorothy G. Kilkenny Earth Science Fund that will put our weekly seminar program on a sound footing, and continued large donations to the Charles Meyer Fund by Charles Shaw (PhD 1956) and the Francis Turner Fund by Iris Borg (PhD 1954). We were able to award fellowships to two of our best students, Jim Watson and Bill Cassata, and they describe briefly their achievements (p. 11). I liked one donation that came with a “string attached,” literally a string stapled to the check, requesting that it be used for undergraduate field trips. Feel free to do the same if you have any specific priorities for your contributions and even though we have consolidated our fundraising in the “Friends of Earth and Planetary Science Fund” for administrative reasons, we will honor special requests for how you like to see your donation used.

The Campus has started a large fundraising program, the Campaign for Berkeley. Compared with Stanford’s endowment (\$17 billion in 2007) and Harvard (\$34 billion), Berkeley is with an excellent \$2.9 billion still far behind. But in order to provide the best education to talented students of a broad population, public universities can no longer rely solely on state funding. Our EPS Commencement speaker, UC Berkeley Provost George Breslauer, was reminding us of the role of THE premier public university in advancing research but also making higher education available to a broad sector of the population. About one-third of all undergraduates in the country come from families with incomes less than \$40,000 a year. Berkeley serves more of these economically disadvantaged students than all of the Ivy League universities combined. Last year, more than 8,400 undergraduates received a total of \$40.5 million in scholarships, many of them privately funded. You probably have heard about Berkeley in the news. Not just the oak trees and tree sitters made headlines but also the California State budget, which resulted in great cutbacks that hurt not only students but also our Department. Out of 150 yearly faculty searches, only 25 were allowed this year and, unfortunately, our geochemistry search is not among them.

To learn more about our Campaign for Earth and Planetary Science (which is part of this overall Campaign for Berkeley), visit our website at <http://eps.berkeley.edu/campaignberkeley>. You will see my letter introducing the overview of our priorities for the department. This letter is followed by all the priority areas within which we are working and for which we need some financial support to achieve our potential. Once you have a chance to review these priorities, should you have any questions, please let me know.

This year the Department is undergoing a comprehensive review, the first since 1993. It starts with a self-assessment stage: Where are we and in which direction do we want to go? Next year a visiting committee will analyze our position and make recommendations. At the moment we are gathering data, which reveals that the number of EPS majors has grown from 35 in 2002 to 83 in 2008. Women are now a majority. Classes are crowded and field camp is now taught every year by George Brimhall and hosted by his wife Mary Jane in Montana. Interesting information emerged from an UC-wide exit survey of graduating seniors in 2007. In perceived excellence in progress, our Department exceeds other physical science departments at Berkeley and the overall Berkeley average, not only in fields such as knowledge in specialty, computer familiarity, quantitative thinking and oral presentations, but in writing and English language skills as well! For this review I am soliciting input from alumni: Your opinions on how we could improve our undergraduate, graduate and research programs in the future would be greatly appreciated. Our alumni know best who we are and have a broad perspective. The best education for students is our main mission, but we invite you to provide your feedback on how we can improve even more. To do so, please e-mail me at [wengk@berkeley.edu](mailto:wenk@berkeley.edu) to give us your ideas and input.

We invite you to participate with us by attending events and seminars, by providing your input for our departmental review, and in other ways that interest you. Charles Shaw just visited us and we had a great time together, hearing his tales about the department in the ‘50s.

In conclusion my thanks go to Doris Sloan for editing this Annual Report again. She has done an excellent job, not only in producing a beautiful document but also in managing to get all contributions in time. I also owe appreciation to our excellent staff for keeping everything running smoothly. We will miss Matt Cataleta, leaving us after seven years to assume a position in Civil Engineering. In the office we have been joined by Dawn Geddes.

With warm regards,
Rudy Wenk

DEPARTMENT FACULTY - FIELDS OF SPECIALIZATION



Allen, Richard M., Associate Professor, Ph.D., 2001, Princeton University. Seismic imaging of deep Earth processes; crust and mantle interactions; kinematics and dynamics of fault rupture; earthquake initiation processes and warning systems.



Alumbaugh, David L., Adjunct Professor, Ph.D., 1993, University of California, Berkeley. Geophysics; physics of electromagnetic induction and propagation in the earth; imaging the structure of the earth with inverse methods.



Alvarez, Walter, Professor, Ph.D., 1967, Princeton University. Global geological history; Mediterranean stratigraphy and tectonics, especially Italy and Spain; impacts and mass extinctions; Big History (Cosmos, Earth, Life, and Humanity).



Banfield, Jillian F., Professor, Ph.D., 1990, Johns Hopkins University. Geomicrobiology, microbial ecology and evolution; nanoparticles in the environment.



Berry, William B.N., Professor, Ph.D., 1957, Yale University. Climate and related environmental changes and mass extinctions; Bay Area watershed and wetlands restorations; K-12 environmental science education; hypoxic-anoxic environments.



Bishop, James K.B., Professor, Sc.D., 1977, MIT/WHOI Joint Program in Oceanography. Chemical, physical, and biological controls on the cycles of carbon and related chemical species in the ocean; robotic instruments for ocean exploration.



Boering, Kristie A., Associate Professor, Ph.D., 1992, Stanford University. Atmospheric chemistry and climate; field, laboratory, and modeling studies of the stable isotopic compositions of atmospheric trace gases; photochemical isotope effects.



Brimhall, George H., Professor, Ph.D., 1972, University of California, Berkeley. Development of digital mapping systems; mineral exploration; geo-politics and earth resource issues; geoscience education reform.



Buffett, Bruce, Professor, Ph.D., 1991, Harvard University. Dynamics of planetary interiors and generation of magnetic fields; physical modeling of gas hydrates and consequence for climate change.



Bürgmann, Roland, Professor, Ph.D., 1993, Stanford University. Active tectonics, space geodesy and structural geology; observations and models of crustal deformation associated with active faults and volcanoes.

Chiang, Eugene, Professor, Ph.D., 2000, California Institute of Technology. Theoretical astrophysics, emphasizing the origin of planetary systems; the dynamical evolution of circumstellar disks, including the Kuiper belt.



Clark, Simon, Adjunct Professor, Ph.D., 1990, Birkbeck College, University of London. Mineral physics; high-pressure experimental geophysics; structure and dynamics of planetary interiors.



Cohen, Ronald C., Professor, Ph.D., 1991, UC Berkeley. Atmospheric chemistry and its role in climate change; development of technologies for detection of atmospheric trace chemicals; *in situ* measurements from air and ground-based platforms.



Collins, William D., Professor in Residence, Ph.D., 1988, University of Chicago. Global climate models; interactions of sunlight and heat with the Earth's surface and atmosphere; applications of remote sensing to understand climate processes.



Cuffey, Kurt M., Professor, Ph.D., 1999, University of Washington. Glacier mechanics; paleoclimatology; environmental isotope geochemistry; river processes.



DePaolo, Donald J., Class of 1951 Professor of Geochemistry, Ph.D., 1978, California Institute of Technology. Isotope geochemistry and geochronology; igneous petrogenesis; environmental geochemistry.



de Pater, Imke, Professor, Ph.D., 1980, University of Leiden. Radio and infrared observations of the Solar System, including giant planet atmospheres and Jupiter's magnetosphere.



Dietrich, William E., Professor, Ph.D., 1982, University of Washington, Seattle. Hillslope and fluvial geomorphology; mechanics of sediment transport; hydrology.



Dreger, Douglas S., Professor, Ph.D., 1992, California Institute of Technology. Wave propagation; earthquake source physics; earthquake hazards; realtime seismology; nuclear monitoring.





Fung, Inez Y., Professor, Sc.D., 1977, Massachusetts Institute of Technology. Climate change; global carbon cycle; geophysical fluid dynamics and large-scale numerical modeling; remote sensing of the Earth.



Ingram, B. Lynn, Professor, Ph.D., 1992, Stanford University. Paleoclimate reconstruction; paleoceanography; marine, estuarine, and lacustrine geochemistry; geoarchaeology.



Jeanloz, Raymond, Professor, Ph.D., 1979, California Institute of Technology. Mineral physics; ultra-high-pressure experimental geophysics; constitution and evolution of planets; Earth science and environmental policy; national and international security.



Kirchner, James, Professor, Ph.D., 1990, University of California, Berkeley. Environmental earth sciences; watershed hydrology and geochemistry; weathering, erosion, and climate; analysis of environmental data; evolutionary ecology.



Manga, Michael, Professor, Ph.D., 1994, Harvard University. Geophysical and environmental fluid dynamics; planetary geodynamics; volcanology; hydrogeology.



Militzer, Burkhard. Assistant Professor, Ph.D., 2000, University of Illinois. Computer simulations of planetary interiors using first-principles simulation techniques at extreme pressure and temperature conditions.



Pride, Steven R., Adjunct Professor, Ph.D., 1991, Texas A&M. Crustal physics; seismic stimulation to mobilize pollutants and hydrocarbons in porous rocks; physics of seismic attenuation; electrokinetic coupling phenomena.



Rector, Jamie, Professor, Ph.D., 1990, Stanford. Seismic techniques for characterizing reservoir properties and processes; seismic reflection imaging; borehole seismology; near-surface seismology with applications to environmental remediation.



Renne, Paul R., Adjunct Professor, Ph.D., 1987, University of California, Berkeley. Geochronology; paleomagnetism; flood basalts; Earth-Moon impact chronology; Permian-Triassic boundary; hominid evolution; geologic time scale calibration.

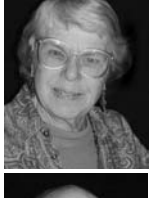
Richards, Mark A., Professor, Ph.D., 1986, California Institute of Technology. Mantle convection and large-scale mantle structure; dynamics of terrestrial planets; dynamics of global plate motions; regional crustal deformation and earthquake hazards.



Romanowicz, Barbara A., Professor and Director, Berkeley Seismological Laboratory, Doctorat d'Etat, 1979, Université de Paris. Global seismology; Earth's deep structure and dynamics; waveform modeling and tomography; normal-mode theory.



Sloan, Doris, Adjunct Professor, Ph.D., 1981, University of California, Berkeley. Biostratigraphy; history of San Francisco Bay; introduced species in the Bay; regional geology.



Wenk, Hans-Rudolf, Professor and Chair, Ph.D., 1964, University of Zurich. Mineralogy; mineral physics and structural geology; special interest in deformation and anisotropy development in the deep earth.



EMERITI

Bukowski, Mark S.T., Professor Emeritus, Ph.D., 1975, University of California, Los Angeles. Physics and chemistry of planetary interiors; mineralogy; high pressure mineral physics; planetary structure and evolution.



Carmichael, Ian S.E., Professor Emeritus, Ph.D., 1960, University of London. Igneous petrology; analytical chemistry of volcanic rocks; experimental studies of silicate melts; geologic evolution of western Mexico and the western Basin and Range.



Curtis, Garniss H., Professor Emeritus, Ph.D., 1951, University of California, Berkeley. Founder of the Berkeley Geochronology Center; Geochronology and volcanology; K/Ar and Ar⁴⁰/Ar³⁹ dating and application to geologic timescale.



Johnson, Lane R., Professor Emeritus, Ph.D., 1966, California Institute of Technology. Seismology and physics of the Earth's interior and wave propagation; seismic source theory; applied geophysics.



Morrison, H. Frank, Professor Emeritus, Ph.D., 1967, UC Berkeley. Applied geophysics: electrical and electromagnetic methods for mapping subsurface conductivity; cross-well electromagnetics for reservoir characterization; numerical modeling and inversion.



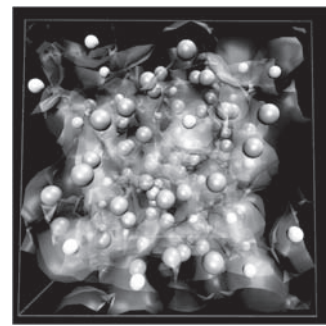
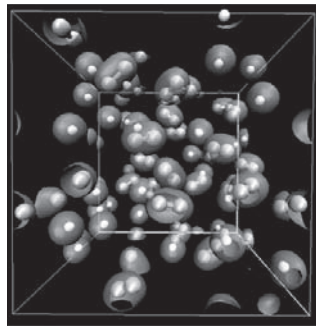
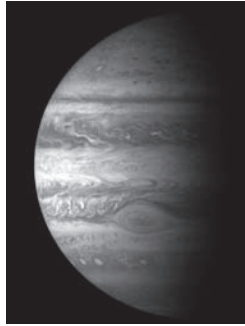
Wang, Chi-yuen, Professor, Ph.D., 1964, Harvard University. Tectonophysics; heat and fluid transport in the Earth; hydrological processes during earthquakes; hydrological processes on Mars; crustal deformation in active tectonics.



COMPUTER SIMULATIONS OF MATERIALS IN THE EARTH AND IN GIANT PLANETS

by Burkhard Militzer

The giant gas planet Jupiter (left) is primarily composed of hydrogen and helium. Under pressure, hydrogen transforms from a molecular fluid (middle) to a metallic fluid (right). Both images are taken from our computer simulations. The spheres denote the position of the nuclei and the iso-surfaces show the electronic charge density.



My research is focused on computer simulations of materials at high pressure. Computer simulations play an increasing role in Earth and Planetary Science because materials in the interiors of planets are exposed to extreme pressure and temperature conditions that, in many cases, cannot be reached with laboratory experiments. In Jupiter, e.g., the pressure in the hydrogen-helium gas mixture reaches 40 million atmospheres while laboratory experiments have only reached one tenth of that pressure. For the interior of the Earth, where experiments are able to probe the required pressures, computer simulations provide additional information that is not attainable with measurements.

I focus my work on first-principles computer simulation techniques, which allow me to predict the properties of real materials by solving a set of mathematical equations to describe the motion of electrons and nuclei. In contrast to earlier methods, first-principles simulations are not fit to the experimental data but instead rely only on fundamental properties of electrons and nuclei like mass and charge. This significantly advances the method's predictive capabilities. However, first-principles simulations are extremely complex and require very powerful computers, so I regularly use different supercomputing centers in the nation.

I apply these simulation methods to address outstanding problems in mineral physics and in planetary science. I am interested in understanding the interior structures of giant planets because they help address key questions about the processes that led to their formation and the solar system as a whole. Recently I performed a long series of simulations of hydrogen-helium mixtures at high pressure in order to derive a new model for Jupiter's interior. One of the open questions is whether there is a rocky core at the planet's center. Previous research predicted that Jupiter had a very small core, or no core at all. However, our computer simulations challenge the existing views about Jupiter's interior and instead predict a substantial core of 14 Earth masses. Establishing the existence of a large rocky core in Jupiter is important because it favors core-accretion as the mechanism for Jupiter's formation. This is vital to an improved understanding of the key processes of early solar system evolution.

There are two reasons why our new Jupiter model differs from previous ones. First, the computer simulations predict that hydrogen changes gradually from a molecular to a metallic state (figure above). Secondly, the performed first-principles simulations revealed significant inaccuracies in the equation of state of hydrogen-helium mixtures at high pressure. The new equation of state will also be used to interpret data from NASA's Juno mission, where an orbiter will map out Jupiter's gravitational field with unprecedented precision.

The challenge in predicting material properties are not the fundamental laws of physics, which are well-known, but rather how to solve the governing equations efficiently with great accuracy. While existing first-principles simulations have been very successful, they are not perfect and one is required to make approximations in treating the electron interactions. In particular when it comes to metallization of materials under pressure and to predicting changes in the electronic spin configuration, existing methods are not yet sufficiently accurate. That is why I am collaborating with other groups to apply and develop quantum Monte Carlo methods. QMC will be part of the next generation of simulation techniques that will replace current methods and let us predict the electronic properties of materials much more reliably. These new techniques will first be applied to minerals at high pressure and help us characterize phase changes in the interior of the Earth. Further development and application of simulation method will be key to providing important insight into selected planetary science problems.

PROBING PLANETARY INTERIORS

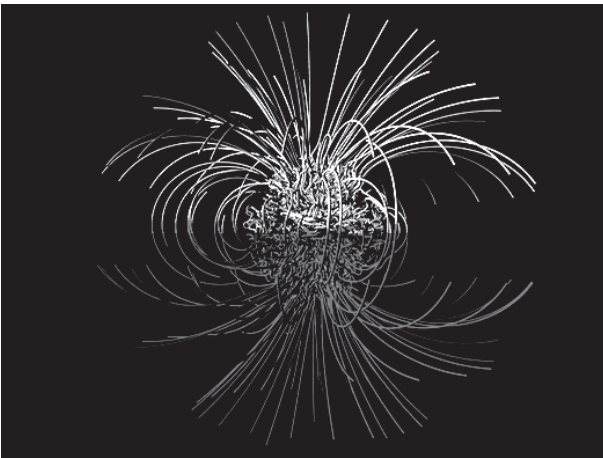
by Bruce Buffett

I joined the Department this past summer with the knowledge that I was entering a vibrant and stimulating academic environment. Broad thinking and scientific leadership are just a few of the attributes that come to mind when I think about Berkeley. As I unpack my boxes and begin the task of setting up a new research enterprise, I eagerly look forward to new collaborations with faculty and students.

My interest in geodynamics began when I happened to enroll in a class on the topic at the University of Calgary. This course tied together many of the subjects I had enjoyed as an undergraduate and gave me a focus for what I wanted to do in the future. I entered the graduate program in geophysics at Harvard University, where I worked under the supervision of Irwin Shapiro. Irwin's group had recently used astronomical measurements to detect small errors in the predicted response of the Earth to tidal forces. Part of this response is a gentle rocking of the Earth, which causes the fluid core to slosh back and forth. By changing our assumptions about the internal structure of the planet, we predicted changes in the flow that eliminated most of the small errors in the tidal response. About ten years later, after many further refinements with my colleagues Sonny Mathews and Tom

Herring, the theory was adopted by the International Astronomical Union for predicting tidal variations in the Earth's rotation.

At the end of my graduate studies I moved from Harvard to Cambridge to work as a post doc in the Institute of Theoretical Geophysics. The Institute had recently been started as a joint venture between the Department of Earth Sciences and the Department of Applied Mathematics & Theoretical Physics at the University of Cambridge. This was an extraordinary opportunity to work with a talented group of people and to learn more about fluid mechanics. Since then, I have continued to apply fluid mechanics to study the dynamics and evolution of planetary interiors.



Magnetic field in numeric simulation.

have made it possible to simulate convection and field generation in planetary cores. However, the energy sources that drive these processes are not fully understood. Cooling and solidification of the liquid iron core are important ingredients, but the rate at which energy is supplied to the geodynamo is ultimately regulated by the transport of heat through the more massive and sluggish mantle. Even the style of tectonics at the surface can be important. The fact that Earth has both a magnetic field and plate tectonics is probably not a coincidence. Mars and Venus do not have magnetic fields at the present time, and the reason may be due to their immobile lithospheres and low internal heat flow. On the other hand, internal magnetic fields have been detected on Mercury and on the rocky satellite Ganymede. The existence of fields on these bodies is a surprise that challenges our current understanding.

A more recent interest in natural gas hydrates has drawn my research into the arena of climate science. Gas hydrates are ice-like solids that trap large quantities of methane in marine sediments below continental slopes. Speculations about methane release from gas hydrates in response to rising ocean temperature have prompted serious but unresolved questions about the consequences for future climate change. A basic understanding of the processes involved in the growth and breakdown of gas hydrates is a first step toward assessing any potential risk.

40-YEAR CLASS REUNION 2008

by Paul Hanshaw '69, Chair, Reunion Committee



Kara Quan-Montgomery

We had a great Class Reunion in April associated with UCB's Cal Day. A group of 34 alums and spouses from undergrad/grad classes representing 1968 -77 attended Saturday Cal Day events and a reunion Dinner, plus a field trip the following day.

Saturday, April 12

We began with Cal Day tours of the Department and a "Hospitality Suite" set up for folks to relax and remember (or try to). Two special EPS Cal Day events were set up for the Reunion:

- o **Field Geology and Digital Mapping with new Technology by Prof. George Brimhall** - young kids showing old folks how to map without a Brunton!

- o **Walk to Memorial Stadium & Hayward Fault with Prof. Richard Allen** - a walk from Hearst to the Memorial Stadium, good discussions, plus we learned where not to sit during football games!



Kara Quan-Montgomery

Russell McArthur explaining digital mapping to Paul Hanshaw.

Saturday evening we moved to the Durant Hotel for dinner for 40 of us (Alums/spouses, speakers and 3 current students). We started with Happy Hour and slowly moved toward dinner. Geologists still know how to talk and drink! It was interesting to experience *déjà vu* and have memories and names bubble to the surface as conversations covered 40-year memories and subsequent life. Lots of experiences and quite a lot of travel by many.

I think the range was from



Andrei Sarna-Wojcicki

Richard Allen (center, pointing) with alums at Memorial Stadium.

not moved from Berkeley (Wenk) to worked/lived worldwide (Heming & Moler). We also had a good mix of academic, government and military/industrial complex careers.

During dinner we had three guest speakers, plus field trip announcements:

- o Russ Graymer ('92), USGS, talked about Bay Area geology (did we map it right?)
- o Bill Berry talked about "the old days" (pre-continental drift!)
- o Dean Mark Richards talked about today's EPS Department and UCB
- o Doris Sloan ('75, '81) gave a preview of the Sunday field trip to the Point Reyes area

Sunday, April 13

At 9AM we assembled outside McCone hall to begin our drive to the Point Reyes area. As per 40 years ago we had the field trip guide (Doris) in one vehicle working the radio to describe outcrops en route to folks in all vehicles ("and up this drive is Skywalker Ranch?"). We assembled at Drakes Beach, ate, placed maps/x-sections on a van and had a brief overview of the site (so nothing changes.....except we huddled around a Prius to mumble about climate change and alternative energy... but where is the beer!). Doris was our guide with



Paul Henshaw

From left: David Aubry, Pam Murray, Jim Murray, Bill Moler and Colleen, Carol Henshaw, Anna Aubry.



Paul Henshaw

From left: David Aubry, Rudy and Julia Wenk and Russ Graymer.

additional comments by Andrei....great outcrop – faults parasequences, erosion.... We then piled back into our vehicles and went to Kehoe Beach for some more excellent outcrops and discussion. The weather was great, company was enjoyable, what else could we want! (beer!!). We then parted, some headed for home, some for the airport, and some for some wine (wine??? We are getting old!!). Some of the spouses were very intrigued and commented among themselves, “so this is a field trip,” “geology can be fun!” We all vowed that we needed to meet more often – few will make it another 40 years! Look for plans for an “All Years Reunion” in 2010!! Maybe we can persuade Andrei to chair it.

Thanks to all who helped make this a wonderful reunion! For additional photos by Kara Quan-Montgomery, see www.kodakgallery.com/karajade/geology.

Reunion Committee

- Paul Henshaw '69 (Chair)
- Jim Murray '68
- Joe MacIlvaine '69
- Peter Yen '69
- Julia Wenk '70
- Andrei Sarna-Wojcicki '71
- Alan Lattanner '72
- Robert Heming '73
- George Brimhall '69, '72' (Faculty)
- Doris Sloan '75, '81 (Adj. Faculty)



Andrei Sarna-Wojcicki

Doris Sloan showing alums Kehoe Beach granitics.



Kara Quan-Montgomery

Andrei Sarna-Wojcicki (center) and Jim Bishop (right) examining the fault crack in the south wall of Memorial Stadium.



Paul Henshaw

Andrei Sarna-Wojcicki recreating California coastal geology in the sand at Kehoe Beach.

IN MEMORIAM: DAVID L. JONES (1930-2007)

David (Davey) L. Jones, professor of geology emeritus, died on October 30, 2007 at his home near Placerville after a long struggle with cancer. He was 77 years old.

During his 30 years with the U.S. Geological Survey (1955-85) and his decade at UC Berkeley (1985-1996) Davey made fundamental contributions to the understanding of the tectonic evolution of the Cordillera of western North America, contributions that greatly expanded and sharpened the original scope of plate tectonics. The first major breakthrough in understanding the complex geology of the Coast Ranges came with a 1964 paper by Bailey, Irwin, and Jones, in which Davey provided the paleontological age information on the rare fossils that had been collected. This paper provided the key to recognizing that the California Coast Ranges were produced at a plate margin where oceanic crust was subducted beneath North America. Working in Alaska, Davey and his colleagues recognized that smaller blocks of continental crust moved around independently and were incorporated in the Cordillera. They called these units “terranes,” and with detailed fieldwork in remote parts of Alaska, they recognized many different terranes, each with its own unique geological history.

Another key contribution Davey made to Cordilleran geology was the development of a technique to isolate radiolarians from the host rock chert. At his USGS laboratory he dated a large number of samples. Microfossils from these previously intractable rocks provided the chronological information that fleshed out the terrane concept and thus unlocked the tectonic history of the Cordillera.

After coming to UC Berkeley, Davey continued to make contributions to Cordilleran geology. With his Berkeley colleagues he showed that the enigmatic Alaskan Wrangellia terrane was formed by the eruption of enormous piles of basalt derived from a giant mantle plume. With colleagues from UC Berkeley and the USGS he carried out extensive and detailed geologic mapping of the Bay Area that provides critical information relevant to earthquake risk.

After Davey retired from the Department, he moved to his winery near Placerville, where he and his family produced highly regarded wines with the appropriately geological name “Lava Cap.” He will be remembered by his colleagues both at Berkeley and at Menlo Park for his passion for geology and his strong and forcefully expressed scientific opinions, as well as his scientific contributions.

by Doris Sloan MS '76, PhD'81 Paleontology



(L-R) Davey Jones, George Brimball, Rudy Wenk and Don DePaolo, 1993.

I worked with Davey for almost 20 years, first while he was my thesis advisor at UC from 1987-1992, and then as he collaborated with the USGS on the San Francisco Bay Region Project. He taught me about radiolarian biostratigraphy, terrane theory, and big-picture structural geology. He was also an amazing geologic mapper. I recall a time he found in a few moments the key bit of an outcrop, as I stood scratching my head over an aphanitic black rock (turned out to be hornfels from shale protolith, as revealed by the metaconglomerate layer Davey found).

Davey was great to work with as long as you were willing to challenge and be challenged. I don't think working with him was for the faint of heart, as I was, from time to time, on the receiving end of a biting observation that tore down my finely constructed house-of-cards geologic theory. But he was a great mentor, and I learned a great deal from him.

Davey had a catalog of phrases that he enjoyed rolling out at the appropriate time: “If you can't do that, you might as well go sell shoes,” I think was my favorite

He was also a great friend. He stepped in when my original thesis advisor advised me to give up. He and his wife were guests and my wedding. He made the contacts for me that eventually led to my present position at USGS.

Unfortunately in the last years his health and my commitments (work and family) prevented us from seeing much of each other. Nevertheless, I count myself greatly privileged to have known and worked with Davey. I especially miss our interactions in the field.

by Russell W. Graymer, '92



(L-R) Intern, Russ Graymer, Davey Jones, intern, Earl Brabb, and Larry Dickerson discuss previous mapping in the field near Sibley Volcanic Regional Park, Spring 1995.

STUDENT ACTIVITIES

GAB: Geology at Berkeley

The Mission of the Geological Association at Berkeley (GAB) is to further an interest in Earth & Planetary Science through academic activities among peers including a special focus on outreach and community involvement. Our goal is to present an alternative source of academic enrichment and emphasize global awareness to complement formal study. For more information, see the GAB website at: <http://www.geologicalassociation.com>.

Bill Cassata *Turner Fellow*

Although geoscientists have been aware of the dynamic nature of Earth's magnetic field for decades, a comprehensive spatial and temporal record of the configuration and intensity of the field during reversals and excursions has yet to emerge. Paleomagnetic field behavior is well-recorded by lava flows that can be accurately dated using the $^{40}\text{Ar}/^{39}\text{Ar}$ technique, thereby permitting straight-forward correlations with records of established excursions and reversals. The geochronology of lava flows from Crater Lake, OR, has been extensively studied, and more than 15 lava flows are constrained to have erupted during periods of late Pleistocene and Holocene transitional geomagnetic field behavior. In an effort to better delineate geodynamo processes during excursions and reversals of Earth's magnetic field, Bill Cassata collected a number of oriented cores from these lava flows and is currently working on the paleomagnetic analyses with support from the Francis Turner Fund.

Jim Watkins *Meyer Fellow*

Diffusion is a fundamental mode of mass transport that governs the kinetics of many important ore-forming processes. In addition, mass transport and reaction processes (e.g. fluid-rock interactions) that concentrate the elements within ore deposits leave their signatures in isotopic ratios. For his dissertation Jim Watkins has undertaken several projects aimed at understanding chemical diffusion and isotopic exchange during mixing between silicate melts, high temperature crystal growth in silicate melts, and low temperature crystal growth in the presence of a moving fluid. The Charles Meyer Fund has generously supported the latter of these projects, where lab experiments and isotopic measurements are used in a study of the combined reaction-diffusion-advection process at the crystal-liquid interface during precipitation of calcite.

Corina Cerovski-Darriau *US Student Representative*

International Year of Planet Earth Launch Event; Paris, France, February 2008

Last fall I submitted a paper entitled "Hazards: Minimizing Risk, Maximizing Awareness" to the UNESCO International Year of the Planet Earth student contest. Based on that paper, GSA sponsored me as the sole US student representative to attend the February 2008 launch event in Paris, France.

I had an interesting perspective being the only student to represent the United States, a country of such interest and intrigue to most of the other students there. I was honored to be able to represent my country, but there was also an odd pressure being from a country so highly publicized both as a distinguished and infamous nation. As the U.S. Representative, I had to be knowledgeable of all things American. I was questioned about everything from state capitals, to the NBA, to college recommendations, to politics. It was especially humbling to see how much of a vested interest the rest of the world has in our presidential elections.

As a geology student with a Peace and Conflict Studies minor, just being able to see the UN in action--even just a small branch and a single committee--was worth the trip. However, the connections I made with other students were even more valuable. I met at least one person from every inhabited continent. In talking with the other students, I was encouraged to hear that the state of the Earth is a worldwide concern and that many are trying to do something about it. Even if we are not sure what to do or where to start, this event enables us to connect in the future and hopefully help in addressing the pressing issues facing this planet.

Coming to AGU? Join us for the annual
SANTA BARBARA'S DAY CELEBRATION

Saturday, Dec. 13, 2008

7-11:30 pm in the Haas Clubhouse

For information contact max@seismo.berkeley.edu

ALUMNI NOTES

Herbert Wells – 1949 B.A. Geology

Julia Wehausen may have reset a trend but was not the first female student at a summer field camp. Apparently during the thirties there was a student named Daisy who was required to bring a chaperon. I know of her only by what Prof. Taliaferro said.

There is no question that in the summer of '48 there was a woman student. She was my spouse at the time. Name Ruth Karvelis Wells, now married to Ted Schassburger and living in Oregon (see Schassburger address in AIME addresses if someone wishes to correspond). She was Class of 49 as was I. (Howell Williams was our adviser). Tucky (behind his back it was the name for Taliaferro, pronounced Tolifer), not only allowed her but said we could have a joint report since they would probably be practically the same. He allowed all pairs of students to do that as it would not have been fair for just us and it cut down on his reading and grading. We did the quadrangle in the foothills of the Sierra around Jackson along the Mother Lode thrust and the Mokelumne (Pardee?) reservoir where Tucky put three on the crew instead of two as on all other teams. In the class of '50 was a woman whose first name is Iris who was allowed to do a summer of thin sections for Dr. Turner as a sub for summer camp.

When my daughter got her geology degree here, we offered summer camp but she elected to go on one with Cal State (not sure which) into eastern Sierras.

I'm glad that silliness is gone. Here at UNLV I've been recruiting women for Geology and Engineering for 45 years.

Charles V. Booth – 1948 B.A. Geology, 1950 M.A. Geology

The mid-80's is a slippery slope, but we are doing better than just hanging on. Our health is still good. I'm taking geology courses at local university, SOU in Ashland, and being brought up to date. Enjoy your Annual report, keep it coming.

Giles Maloof – 1953 B.A. Geophysics

I continue teaching (part-time, retired) at Boise State where geology/geophysics remains strong.

Elwood R. Brooks – 1958 M.S. Geology

Still running back and forth between summer home in Sierra City and winter home near Tucson, at the foot of the Santa Catalina Mts. metamorphic core complex. Just finishing map and text titled "Age and character of silicic ash-flow tuffs at Haskell Peak, Sierra County, California: Part of a major Eocene(?)–Oligocene paleovalley spanning the Sierra Nevada-Basin and Range Boundary." Teaching "Rocks and structures of the Santa Catalina Mountains" to fellow Sun City Vistoso folks during January, 2008. Research Associate at U.C. Davis.

Bill Romey – 1962 Ph.D. Geology

I have just published a new e-book: *The Norman Conquest: How Normandy Conquered Us: A Geologist's Year in Rouen*, and also *The Journal of a Geographer in France*, 2007. It is illustrated with hundreds of color pictures. Two of my previous (recent) e-books are *Norway Through a Geologist's Eyes* 2006, and *An Illustrated Guide to the Geology of Sites Commonly Visited around the Antarctic Peninsula, South Georgia, and the Falkland Islands*, 2004. More information about these books can be found at <http://www.libri-terrarium.com>. This is a web site set up by Alex McBirney, another Berkeley lad!

Richard Nielson – 1964 Ph.D. Geology

Still out there, breaking rocks for a living. One trend in consulting has developed; increasingly I am asked to serve as mentor to younger geologists, who seem to require help with fundamentals of field mapping, mineral and rock identification.

Gustaaf V. Giese-Koch – 1965 M.A. Geophysics

I visit local elementary schools and talk to 5th graders about earthquake science. I bring down the phenomena of elasticity, wave propagation, structural response to e.g. vibration, continental drift, etc. to the 5th grade level of science teaching with a variety of self-made and purchased props. I started doing this in Washington, D.C. while employed with the U.S. Nuclear Regulatory Commission 1981 – 1995.

Ned Brown – 1966 Ph.D. Geology

I taught for 33 years at Western Washington University, retiring in 1999. Throughout my career I found field study to be the most effective educational experience for my students, and in the last years of employment my undergraduate teaching schedule consisted of a two-month course in general field study in the southwest US during spring quarter, and a three-week field petrology course in Washington before the fall term started. I also greatly enjoyed working with M.S. students (35 total) studying petrology and structure, mostly in the North Cascades. I still spend some time plugging on regional geology of the Pacific Northwest – lately collecting rocks for detrital zircon analysis in Washington during summers, and processing samples during winters at the University of Arizona, Laser Chron. Center. But family and friends, loafing (staring into space) are the major part of my schedule nowadays.

Jon Galehouse – 1966 Ph.D. Geology

Retired after 30 years as a Professor of Geology at San Francisco State University. We then designed and built a log home on the banks of the Feather River in Plumas County. Do a lot of traveling. Highly recommend trips to Siccar Point and the Galapagos Islands.

Jim Evans – 1967 B.A. Geology

I read the note about Summer Field by Julia Wehausen Wenk. I took Summer Field in '67, led by Mark Christensen and spent three weeks in Deep Springs Valley/Westgard Pass and two weeks at Hartley Springs. Maybe it was the heat and exhaustion got to me, but it seems to me that there were women geology students on that trip. Does anyone else remember back that far?

Ronald T. Merrill – 1967 Ph.D. Geophysics

I am an Emeritus Professor of the Earth Science and Space Sciences Department of the University of Washington.

Kenneth Howard – 1972 Ph.D. Geology

Our big event for 2007 was celebrating our 40th anniversary.

Ernest Kendall – 1972 Ph.D. Geology

I retired in 2001, after 30 years Mineral Exploration and Environmental/Remediation with Union Carbide/Dow Chemical. Still happily married to my Berkeley bride, Nancy, and am enjoying my 3 children and 3 grandchildren. I currently live in VT and Houston, TX (depending on season) and continue

to maintain active interest in geology/environment projects. Recently returned from 2 years in Romania (with my wife) as Peace Corps volunteers (my second tour, 40+ years after my first) where I worked as advisor for regional EPA office. During this time I also worked with Sibiu University Geology/Env./Agriculture Department to develop/facilitate a winning World Bank contest proposal on "Production of biodiesel from oil seed crops raised on regional Pb smelter contaminated soils." Although it started as only a proposal for a small pilot scale test plot and processing unit, it now appears to be resulting in a private investment of \$150 MM for large scale production.

Am now trying to figure out how to trace a world class helium-in-groundwater anomaly back to a presumed buried economic source. This should keep me occupied for the foreseeable future. We don't get back to Berkeley very often but wish we did.

Horton Newsom – 1975 B.A. Geology

As a student in the early 70's Chuck Meyer and Ian Carmichael introduced me to the geochemical evolution of the earth, while Clyde Wahrhaftig showed us the glacier remnants in the Sierras. My students and I are now having fun investigating these issues on Mars, using gamma ray data, imagery from orbit, and rovers. What an exciting time!

Donald Seeberger – 1976 B.A. Geophysics

I'm a team leader for a petrophysics R & D group at Chevron in San Ramon, CA. I also spend a bit of time working on issues related to subsurface storage of CO₂ for greenhouse gas management purposes. Biggest recent accomplishment: successfully completing treatment for acute myeloid leukemia, culminating in a bone marrow transplant in August 2007. Back working full time, looking forward to completing past transplant drug treatments and getting back to a fully normal life. If you can, please consider registering as a transplant donor!

Wes Hildreth – 1977 Ph.D. Geology

Five months fieldwork in 2007, at Mammoth Mtn. (CA), Three Sisters (OR), and Simcoe Mtns., volcanic field (WA), the latter two in final stages preparatory to geologic map publication. Published a comprehensive overview of Cascade arc volcanism: USGS Prof. Paper 1744, 125p. (<http://pubs.usgs.gov/pp/pp1744/>); and a long J. Petrology paper on eruption and zoning of the Bishop Tuff, far more detailed than my thesis study in the 1970s. The harder you look, the more intricate the plot.

Pamela J. Irvine – 1977 M.S. Geology

I'm still working at the California Geological Survey in Los Angeles as a senior engineering geologist/supervisor in the Landslide Mapping unit – Geologic Mapping Program.

Diane Wolfgram – 1977 Ph.D. Geology

I just completed my second year as Head of the Mining Engineering Department in the School of Mines and Engineering at Montana Tech, as well as my tenth as Head of the Geological Engineering Department. I passed our eight-hour licensure examination in Mining Engineering last fall, so am now licensed as a Professional Engineer in Montana, as well as a Geologist in California.

I was greatly saddened by the passing of Hal Helgeson last summer. He was a wonderful teacher, advisor, mentor and above all a caring friend. I would like to see a seminar fund established in his memory and this is my second contribution to that end. I truly wish that I could afford to give more.

Doug Roberts – 1979 B.A. Geology

Although it's been nearly 30 years since I did my fieldwork in the White-Inyo mountains, the memories are as bright as Clyde's yellow high-top sneakers! Go Bears!

Paul Belasky – 1983 B.A. Geology

I still teach geology and paleontology full-time at the Ohlone College and am currently involved in research through the University of Montana on the Permian-Triassic biogeography and displaced terranes of the Koryak highlands in the Russian Far East. I have also recently written and given talks on the history of Russian geology, specifically the phenomenon of Russian poet-geologists who established their own movement in poetry and became famous throughout Russia in the 1960's. I would love to give a Geology Club talk and read their poetry in translation to UC Berkeley geology students.

Polly Brown – 1983 B.A. Earth Sciences

I own a women's clothing accessories retail store in Chagrin Falls, OH named after myself, Polly Brown. I am single and raising 3 teenage boys.

Andrey Aristov – 1984 B.A. Geology

I'm teaching Introductory Geology through Cal State Northridge College of Extended Learning. I'm also moderating the "Earth & Space Science Club" the runs field trips all over Southern California. Best of all, the high school in which I teach just opened a \$30 million science center that houses state-of-the-art geology, oceanography, and environmental science labs and classrooms.

Laura (Magde) McWilliams – 1992 B.A. Geophysics

I am working at URS Corporation as an Environmental Consultant, delineating and re-mediating contaminated sites throughout the Pacific Northwest. More importantly, my husband John (UCB class of 1993, M.A. Electrical Engineering) and I have two beautiful daughters: Alyssa who is 1 and Jessica who is 3.

Adam Odnert – 2000 B.A. Geology

I am thriving between the Cascade and Olympic ranges with life partner Rob, in Redmond, WA. I will miss Hal – thank you Jeff Dick for your thorough and respectful eulogy. I wish you all the very best on earth and beyond.

Josh Kearns – 2005 M.S. EPS

After receiving an MS degree in 2005, I worked as a National Science Foundation Research Fellow for Global Footprint Network, an Oakland-based non-profit that develops and implements the Ecological Footprint - a natural resource accounting tool for measuring the impact of the human economy on the planet. After traveling extensively among agrarian communities in Asia, I founded Aqueous Solutions in 2007 - a grassroots NGO whose mission is to enable households and communities to ensure the safety of their drinking water in an inexpensive, sustainable, and self-reliant manner. For this work I was recently awarded a prestigious grant from the Charles A. and Anne Morrow Lindbergh Foundation, which supports research projects that "will make important contributions toward improving the quality of life by balancing technological advancements and the preservation of our environment."

Kris MacLennan – 2006 B.A.

Currently working on a Ph.D. in Geophysical Engineering at the Colorado School of Mines under Dr. Yaoguo Li. My focus is Applied Geophysics with an emphasis in electromagnetic methods.

DEGREES AWARDED

FALL 2007 - SUMMER 2008



COMMENCEMENT, MAY 2008

Back Row (left to right): Joshua Graham, Benjamin Ginsberg, Scott Strombers, Katherine Pockock, Ashley Salas, Gretchen Sites, Christina Norbygaard, Lauren Core, Lauren Novotny, Lan Ma, Loretta Kwong, Corina Cerovski-Darriau.
Front Row (left to right): Robin Snyder, Kathryn Quigley, Summer Ohlendorf, Emily Chen, Gregg Nishimura, Meara Davies, Amos Hodgson, Shreya Ramesh, Allison King, Jasmine DeCosta, T. Charles Brothers, Dan'l Martinez.
Not in photo: Spencer Gunderson.

BACHELOR OF ARTS

ATMOSPHERIC SCIENCE
Allison J. King
Lan Ma

ENVIRONMENTAL EARTH SCIENCE

Lauren N. Core
Amos Augusto Hodgson
Elaine Jau-Yi Lin
Cuong Vinh Luu
Gregory Ken Nishimura
Katherine Pockock
Ashley Salas

GEOLOGY

Thomas Charles Brothers
Corina R. Cerovski-Darriau
Jasmine Ceriche DeCosta
Joshua James Graham
Spencer Blake Gunderson
Loretta Kwong
Dan'l Aniceta A. Martinez
Christina Elizabeth Norbygaard
Shreya Kamesh
Gretchen Grumio Sites
Scott Ryan Stromberg

MARINE SCIENCE

Emily Ching-che Chan
Meara Wilder Davies
Benjamin Pierce Ginsberg
Lauren Novotny
Robin E. Snyder

GEOPHYSICS

Summer Joi Ohlendorf
Kathryn Chong Quigley

MASTER OF ARTS

Eileen Louise Evans

MASTER OF SCIENCE

Maria Brumm

Ground Water in Tectonically Active Areas: Implications for Heat Flow and the Earthquake-Triggered Eruption of Mud Volcanoes

DOCTOR OF PHILOSOPHY

Douglas McKinnon Allen

Development and application of a process-based, basin-scale stream temperature model

Brent Grocholski

Viscosity of Planetary Fluids and the Amorphization of Crystals at High Pressure

Katherine Jean Hoag

The Anomalous Oxygen Isotopic Composition of Atmospheric CO₂ and Applications to the Carbon Cycle and Stratospheric Chemistry and Transport

Michael Lamb

Formation of Amphitheater-Headed Canyons

Ryan Stewart McWilliams

Elastic and Inelastic Shock Compression of Diamond and Other Minerals

Mei Xue

Using Seismic Methods to Constrain Mantle Convection Processes

Joel Carey Rowland

Tie Channels

Dennise Christine Templeton

Exotic Seismic Sources: Nearly Identically Repeating Events and Non-Double-Couple Earthquakes

Akiko To

Elastic and viscoelastic properties of the solid earth using normal mode based and numerical methods in 1D and in 3D

Mark John Wenzel

Layered Mantle Convection on Mars, and the Electronic Structure of Magnetite

2008 AWARDS & CITATIONS

GRADUATE AWARDS

The Francis J. Turner Fellowship:
William Cassata

The Charles Meyer Fellowship:
James Watkins

George Louderback Awards:
Sean Ford, James Watkins

Outstanding Graduate Student Instructors:
Christian Braudrick, Arianna Gleason

American Geophysical Union Outstanding Student Paper Awards:
Jenny Druhan, Sarah Godsey, Ken Ferrier

UNDERGRADUATE AWARDS

Departmental Citation:
Summer Joi Ohlendorf

Geolympics: Colin Phillips

Association of Women Geoscientists Outstanding Woman Student Award:
Lan Ma

Northern California Geological Society Undergraduate Scholarship Award:
Kathryn Quigley

UNESCO International Year of Planet Earth

Essay Competition:
Corina Cerovski-Darriau



Dean Mark Richards (right) congratulating Richard Allen for his Noyce prize.

DONATIONS TO THE DEPARTMENT

Perry Byerly Fellowship Fund

Alexander, Mia Suverkrop
Dewey, James
Gregor, Nick
Maloof, Giles W.*
Plumb, Bob
Exxon Mobil Foundation⁺

Garniss Curtis Distinguished Professorship

Abrahamson, Norman
Bevc, Dimitri
Broderson, Ray
Classen, Willard
Creely, Scott
Donnelly-Nolan, Julie
Hildreth, Wes*
Lin, Wunan
Maloof, Giles W.*
Medanich, Jim
Ohlmann, John
Shassberger, Ruth
Schetter, William C.*
Exxon Mobil Foundation⁺

Louderback Fund

Maloof, Giles W.*

Thomas McEvilly Fellowship Fund

Allen, Rex & Mary
Bevc, Dimitri
Boyd, Nicholas
Dewey, James
Leith, Bill
McLaughlin, Keith
Mortenson Carl
Seeberger, Donald*
Chevron Texaco Corporation**
Chevron Texaco Corporation**
Exxon Mobil Foundation**
Fluor Foundation⁺
Shell Oil Foundation**

Charles Meyer Fellowship Fund

Henshaw, Paul*
Hildreth, Wes*
McAleer, Joseph F.
McNitt, James
Newsom, Horton
Nielsen, Richard*
Romey, William
Shassberger, Ruth
Shaw, Charles**
Stimpson, Douglas
Thacher, Anson B.
Wenk, Rudy & Julia*

Ralph Newton Emergency Fund

Classen, Willard

Harlan Todd Sutherland Memorial Scholarship

Abrahamson, Norman
Ames, Leslie
Solomon, Ernest

Don Tocher Memorial Fellowship Fund

Dewey, James
Gregor, Nick
Welby, Charles W.

Francis J. Turner Fellowship Fund

Borg, Iris, Borg Family Trust**
Brooks, Elwood R.
Brown, Ned
Cebull, Stanley
Maloof, Giles W.*
Romey, William
Stemmons, David B.
Rudy & Julia*

Friends of Earth & Planetary Science

Including former EPS Chair's Fund, Earth Science Fund, & Speaker's Program Fund
Abrahamson, Norman
Ague, Daria & Jay
Alexander, Mia Suverkrop
Anonymous*
Aristov, Andrey
Bacon, Charles R.
Belasky, Paul
Berke, David
Blake, Wayne
Brothers, Thomas
Calk, Lewis
Doerschlag, Mark
Dow Chemical Corporation*
Galehouse, Jon
Gilbert, Neil
Gillerman, Virginia
Harding, Richard
Hildreth, Wes*
Holdaway, Michael
Hoskins, John*
Irvine, Pamela J.
Kersting, Annie

Knapp, John
Leppaluoto, David*
Lin, Wunan
Liston, James
Maloof, Giles W.*
Marcus, Kim
Marsh, Bruce D.
McClure, Cole*
McKee, Edwin
McWilliams, Laura
Merrill, Ronald T.
Moog, Polly (Brown)
Mozley, Edward C.
Nielsen, Richard*
Pride, Steve*
Prindle, Robert
Roberts, Doug
Roering, Josh
Salter, Dayna*
Seeberger, Donald*
Taylor, Roger L.
Thacher, Anson B.
Trso, Martin
Wallace, Paul
Wolfgram, Diane
Wong, Florence
Yelin, Thomas
Chevron Texaco Corporation**
Exxon Mobil Foundation**
Fluor Foundation⁺
Shell Oil Foundation**

EPS Scholarship Fund

Nock-Salgado, Melane
Romey, William

Field Geology and Digital Mapping Fund

Booth, Charles V. *
Shell Oil Foundation**

Julia and Rudy Wenk Graduate Scholarship Fund

Wenk, Rudy & Julia*

Library Fund

Thacher, Anson B.
Trso, Martin

* Donation of \$1000 or more
** Donation of \$10,000 or more
+ Matching Funds

DEPARTMENT FUNDS SUPPORTED BY ALUMNI AND FRIENDS

FRIENDS OF EARTH AND PLANETARY SCIENCE FUND

Established in 2007 to solicit funds for emergency student aid, collegial activities in support of education and research as well as equipment and facilities upgrades; to help with costs for student activities such as field trips and the yearly Santa Barbara's Day event; to make a monetary award to the winner of the Departmental Citation; to support alumni outreach; to defray the costs of the weekly departmental Speaker's Program in which distinguished speakers from around the country are invited; and to assist in the acquisition of journals for the Earth Sciences Library and Map Collection. To donate, see <http://eps.berkeley.edu>

MEMORIAL FUNDS



Perry Byerly Fellowship Fund: Established in 1978 to honor the memory of Perry Byerly with a graduate fellowship in seismology. 2007-2008 recipient: Shan Dou



Louderback Fund: Established in 1957 in honor of George D. Louderback to award outstanding students who are pursuing research, particularly in the field, in geology and paleontology. 2007-2008 recipients in EPS: Sean Ford and James Watkins



Thomas McEvelly Fellowship Fund: Established in 2002 to honor Professor Thomas V. McEvelly with a graduate fellowship in seismology.



Charles Meyer Fellowship Fund: Established in 1980 to honor Professor Charles Meyer by awarding a graduate fellowship in the area of integrated field and laboratory studies of ore, mineral, and rock-forming processes. 2007-2008 recipient: James Watkins

Ralph Newton Emergency Fund: Established in 1994 in memory of Ralph Newton to provide emergency funds to graduate students.

Milton B. Smith Memorial Fund: Established in 2002 in honor of Professor Clyde Wahrhaftig by the estate of Dr. Milton B. Smith, B.A. 1936, Geology. The fund provides financial assistance to undergraduate students.

Harlan Todd Sutherland Memorial Scholarship: Established in 1987 in memory of undergraduate student, Harlan Todd Sutherland, killed doing field research. Supports graduate student research.



Don Tocher Memorial Fellowship Fund: Established in 1979 to honor the memory of Don Tocher with a graduate fellowship in seismology. 2007-2008 recipient: Ahyi Kim



Francis J. Turner Fellowship Fund: Established in 1986 to honor the memory of Professor Francis Turner with a graduate fellowship in geology. 2007-2008 recipient: William Cassata

ENDOWED FUNDS



Garniss H. Curtis Endowed Chair: Established in 2004 in honor of Garniss' contributions to science and to UC Berkeley.



Esper S. Larsen, Jr. Research Fund: Formally established on October 31, 1989. The proceeds of an endowment left to the University by Eva A. Larsen are used to support new research in the fields of geology, mineralogy and petrology.

2007-8 recipients were:

Lynn Ingram: Holocene Climate Variability in Western Mexico from Lake Isabella Sediment Cores

Michael Manga: Understanding the Homogeneity of Crystal-Rich Dacites: Examples from the San Juan Volcanic Field

Garrison Sposito: Preventing Mercury Methylation in Estuarine Porewaters: Role of the Iron Sulfide Mineral, Mackinawite

Hans-Rudolf Wenk: Mechanical Twinning in Naturally and Experimentally Shocked Quartzites as Potential Paleopiezometer



Ramsden Scholarships: Established in 1994 to support undergraduates who have expressed an interest in preparing for careers in the geosciences.

In 2007-8 the Fund awarded a total of \$10,000 to:

Jasmine DeCosta: Geological Field Camp in Turkey

Bramdon Endo: Marine Research in Friday Harbor, Washington

Myfanwy Rowlands: Conservation Photography Summit Workshop, Colorado

Eric Winchell: Research on effects of fluvial and debris flows with Professor William Dietrich

John E. and Dorothy G. Kilkenny Earth Science Fund: This Fund will be used at the Chair's discretion to ensure the vitality of the department's Speakers Program.



*View of
McCone Hall
from Memorial
Glade.*



Kara Quan-Montgomery

From left to right: Doris Sloan, Judith Coyote, Milly Alvarez, Walter Alvarez, George Brimball, and Rudy Wenk at the Department Barbecue in September 2008.



Kara Quan-Montgomery



Kara Quan-Montgomery

At Geolympics. Left, Kate Patten, Paul Renne, and Corina Cerovski-Darrian; Right, Paul Cheng and Loretta Kwong measuring angles with their Bruntons.



Rudy Wenk strolling through the market of old Balad.



Rudy Wenk and UC President Mark Yudof smoking waterpipe in Jeddah.

IN THE FIELD



Graduate student Leif Karlstrom and Rudy Wenk exploring the contact between aplite and Half Dome rhyolite along Snake Dike.



Tim Creyts and Leif Karlstrom examining a contact between a diorite sill and the Precambrian Helena Dolomite on the Blackfoot Glacier bed. Contact metamorphism is visible in the overlying Helena Dolomite.



Leif Karlstrom (PhD. student of Michael Manga) transporting a survey tripod across the lower tongue of Blackfoot Glacier, Glacier National Park, MT.



Michael Manga collecting hydrological data and samples at Alum Rock Springs after the 30 Oct. 2007, earthquake (5.0M).



Ameeta Patel, Michael Manga, Joe Dufek, and Max Rudolph sampling pyroclastic flows at Mount St. Helens.

IN THE CLASSROOM



Kent Ross introducing second graders from the Berkeley Arts Magnet School to the electron microprobe.



A group from the Oakland Charter School, led by Josh Grabam, touring McCone Hall.