EARTH AND SPACE SCIENCES

2012 Newsletter

UCLA

FROM THE DESK OF THE CHAIR:

In this issue:

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Warm greetings from Westwood to all of you in the extended ESS family! We hope that this newsletter finds you and your loved ones well as 2012 draws to a close, and we assume that dawn will arrive on December 22 with nothing more dramatic than the rollover to a new Mayan Long Count. Hello, my name is Kevin McKeegan, and in another cosmically-unimportant but locally-notable event, I've assumed duties as Chair of the department, taking over from Craig Manning in July. I speak for everyone in ESS as I sincerely thank Craig for four years of devoted leadership that has helped the department thrive even in the face of difficult circumstances in higher education and in the broader economy. I am particularly grateful to Craig for his stewardship of resources and his focus on long-term goals that have enabled me to take the rudder of a ship that is under full sail toward new adventures and discoveries. We're excited to bring to you this update on some recent activities in and beyond the halls of ESS and we hope that you enjoy this annual newsletter and that you stay in touch via our website (www.ess.ucla.edu/alumni/).

My term as Chair started with an exciting adventure, the fruits of which you can see on the cover. At its August meeting, the U.S. Board on Geographic Names designated a formerly unnamed summit in the White Mountains as 'Clem Nelson Peak' in honor of former professor and legendary UCLA field geologist, Clemens Arvid Nelson (1918-2004). The 11,343' mountain is in the Inyo National Forest/Ancient Bristlecone Pine Forest and Professor Mark Harrison kindly agreed to take me on an aerial tour (see box below). Fortunately, the clouds parted long enough for a photo opportunity, but not before gracing Clem Nelson Peak with a light dusting of snow.

Professor Mark Harrison stops for refueling at Bishop Airfield prior to piloting his Piper Cherokee Arrow II to above Clem Nelson Peak in early October. This photo and cover by Kevin McKeegan, riding co-pilot and keeping his hands off the controls.

There have been several other notable peaks (sorry!) for ESS faculty this year. The most impressive belongs to David Jewitt who, in the space of a couple of days this summer, was named the winner of two prestigious prizes in planetary astronomy for his discovery of the Kuiper belt which has greatly expanded the horizons of our solar system (even as it ultimately led to the demotion of Pluto to dwarf planet status). The Shaw Prize was awarded in Hong Kong, and the Kavli Prize was presented in Oslo by Norway's King Harald. Bill Schopf carried on an institutional tradition by winning the Paleontological Society medal, becoming the sixth UCLA scientist to do so over the last 40 years. Bill's father received the same medal in 1978, so this represents the first time it has been awarded to a family member. In the ESS family, some 'excellent Fellows' have been recognized this year by leading scientific organizations: Abby Kavner by the Mineralogical Society of America, Ed Young by the Meteoritical Society, and yours truly by the Geochemical Society and the European Association of Geochemistry. Research scientist Yuri Shprits of ESS and Atmospheric and Oceanic Sciences was honored for his work on modeling the dynamics of high energy electrons in the Van Allen radiation belts and was granted an Early Career Award by President Obama. Not to be upstaged, our students have also garnered many awards; see page 7 for a few examples. Finally, ESS space physicists Bob McPherron and James Weygand were awarded Antarctic Service Medals for their expeditionary work "below" 60 degrees South. Very cool.

In June, we celebrated the truly outstanding career of Professor Gerald Schubert who retired after more than four decades of service to UCLA (see page 5). Although passing a milestone, not much has really changed for Jerry as he has continued his research in geophysics and planetary physics, only now sporting a new title of Distinguished Research Professor, Emeritus. Adjunct Professor Paul Merifield also retired this year to accolades by alumni from multiple decades (see page 6). We are pleased to welcome adjunct professor Sinan Akciz who takes on the task of training new generations of engineering geology students.

ESS welcomed Dorothy Oehler (M.S. '67, Ph.D. '73) back to campus for the 2012 Alumni Lecture, "Focusing the search for biosignatures on Mars." Dr. Oehler, a Precambrian paleontologist and planetary geologist working at the Johnson Space Center in Houston, is a Participating Scientist on the Mars Science Laboratory currently roaming the Red Planet. UCLA/ESS has several other missions exploring the solar system near and far; you can read more about current research – on other planets and on this one – in the features on pages 3-6.

As the end of the year (and the end of this greeting!) draws near, I would like to take the opportunity to thank you for your continuing support of our beloved department. It is truly a humbling experience to be asked to lead such a remarkable group of teachers, scholars, students, and staff. The commitment and dedication of our faculty has remained steadfast, even in the face of difficult financial circumstances (Prop 30 notwithstanding). One anecdote will illustrate this point clearly, I think. One of our professors recently issued a "challenge" to the faculty: he/she would donate $5000 to the department if that amount was matched by Thanksgiving. I am extremely happy and proud to report that the anonymous challenge was met rapidly and convincingly: with about 2/3 of current faculty participating, donations exceed the challenge level three-fold and emeriti have also donated an amount surpassing the original challenge. The faculty clearly believe in the mission of the department and the University, as I know you alumni do as well. Recently, the Harris family took the initiative to re-establish a summer field scholarship in memory of Walter S. Harris (M.S. '58). This unsolicited gift ($7000) is welcome like unexpected rain on parched fields and, along with other alumni gifts and the Clarence Hall scholarship, it will really help to offset the expenses of our students as they execute the 'capstone' of their geology majors. On behalf of all the faculty and staff, we realize that it is not possible for everyone to set up such scholarships, but if it is within your means to consider even a small gift this year, please do so. Even with a modest participation rate, the alumni should be able to "beat" the faculty – a competition that can only benefit our students and enable us to maintain our position as one of the leading public research universities in the world. I extend my sincere gratitude and I hope to see you at one of our upcoming events or hear from you in the coming year!

Prof. Kevin McKeegan

PROFESSOR ED RHODES HOSTS EIGHTH ANNUAL NEW WORLD LUMINESCENCE DATING CONFERENCE

OSL sampling of large scale late Pleistocene tropical storm flood sediments, Baja California, Mexico. Jose-Luis Antinao (Desert Research Institute, Reno, NV) to left and ESS students Nathan Brown and Wendy Barrera record sediment characteristics and measure environmental dose rates with a portable gamma spectrometer.

Luminescence experts from all over North America and several from South America and Europe gathered at UCLA from September 5 to 9, 2012 to discuss the latest research on luminescence dating. The conference began with an introduction by Ed Rhodes to the basics of the science, a form of geochronology that works by measuring intensity of photons released when electrons from trapping centers recombine within mineral grains during optical stimulation in the laboratory. The technique provides the opportunity to date sediment deposition directly on timescales of one to 200,000 years, and allows researchers to study rates and patterns of geologic processes, including climate change, fault movement, and paleoenvironments as well as different archaeological contexts. Talks and posters covered the use of luminescence dating over a wide spectrum of geographic locations, from the Midwest to New Zealand, Brazil, China, and South Africa. Presentations included equipment and technical advances, applications to tectonic, fluvial, glacial contexts, research into soil development and grain movement, and reconstructions of thermal histories for archaeological ceramics, engineering structures and wildfire situations. On the final day, Rhodes took the conference participants on a guided tour of sites of geologic interest in Southern California, including the San Andreas Fault, scenic Vasquez Rocks, the Santa Monica Mountains, and the beach at Point Dume. In addition to Rhodes' lively commentary, there was discussion of many issues related to luminescence dating in the context of Southern California. ESS alumni were invited along on the trip and contributed to the discussion.

Scan the code to watch a video of Prof. Rhodes demonstrating the luminescence dating process in his laboratory.

AN YIN DISCOVERS PLATE TECTONICS ON MARS

Contradicting long-standing scientific assumptions, An Yin has posited that plate tectonics exist not only on Earth but also on Mars.

Yin explains: "Mars is at a primitive stage of plate tectonics. It gives us a glimpse of how the early Earth may have looked and may help us understand how plate tectonics began on Earth."

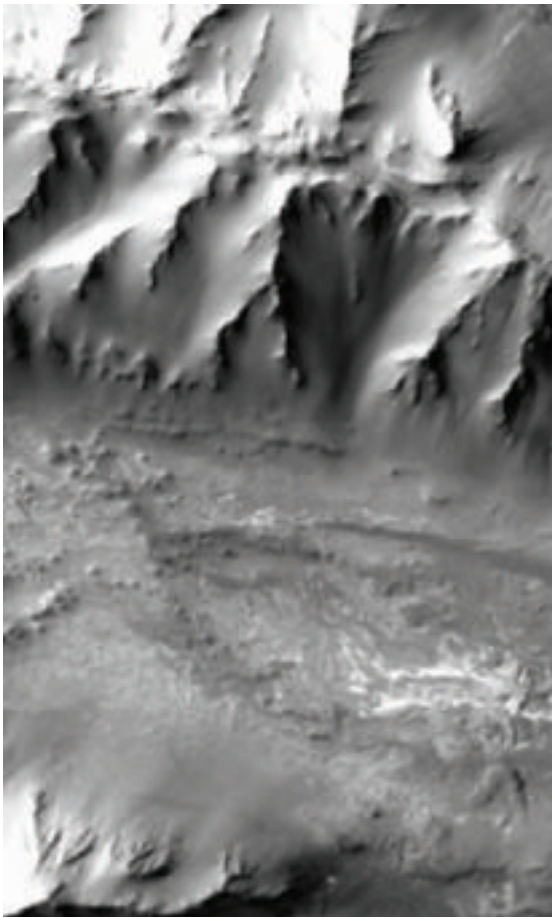
Yin made the discovery during his analysis of satellite images from THEMIS (Thermal Emission Imaging System), an instrument on board the Mars Odyssey spacecraft, and from the HIRISE (High Resolution Imaging Science Experiment) camera on NASA's Mars Reconnaissance Orbiter. He analyzed about 100 satellite images — approximately a dozen revealed evidence of plate tectonics.

Yin has conducted geologic research in the Himalayas and Tibet, where two of the Earth's seven major plates divide.

"When I studied the satellite images from Mars, many of the features looked very much like fault systems I have seen in the Himalayas and Tibet, and in California as well, including the geomorphology," said Yin, a planetary geologist.

In the Martian images, Yin noticed a very smooth, flat side of a canyon wall and a steep cliff – features typically generated by faults on Earth and similar to cliffs found in California's Death Valley. Mars has a linear volcanic zone, which Yin said is a typical product of plate tectonics.

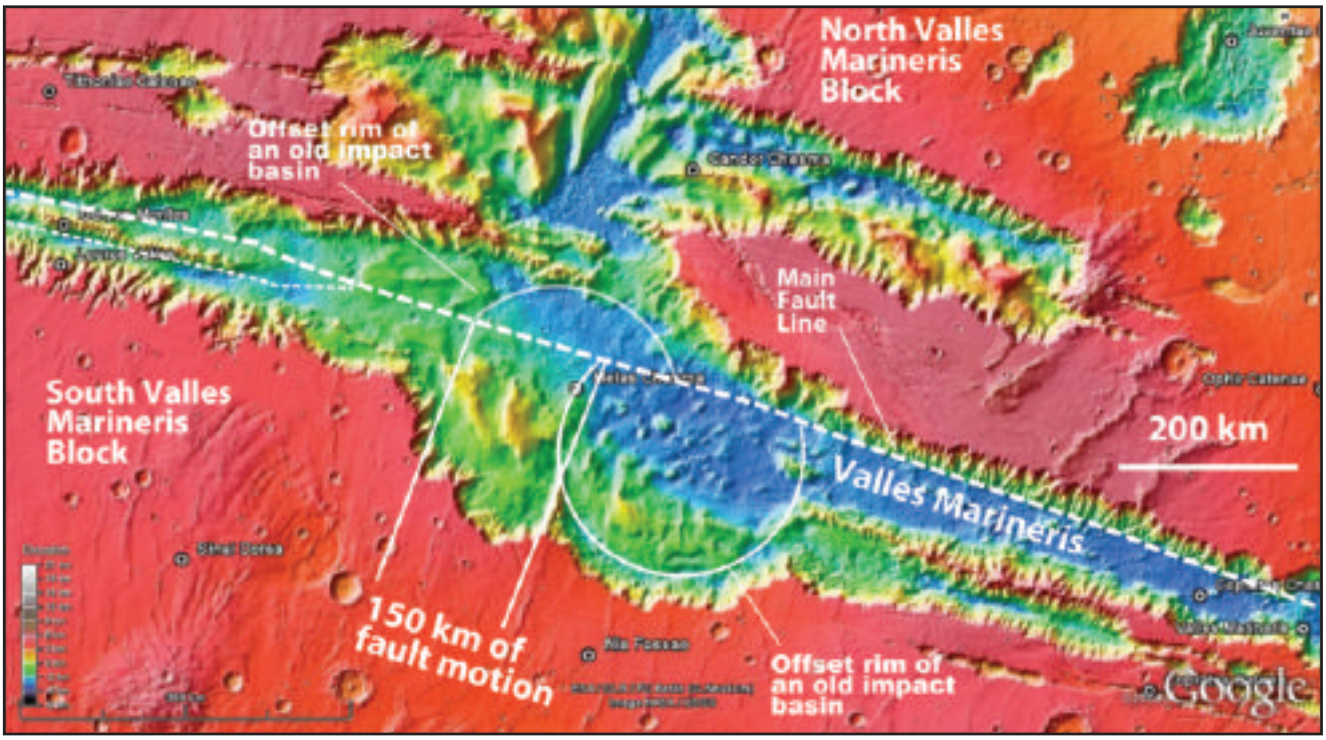
Yin's research was featured as the cover story in the August issue of the journal Lithosphere and was widely covered in the scientific press.



View of interior part of Mars' Valles Marineris.

PLATE TECTONICS ON MARS (CONT.)

ESS students and faculty often make the news with their research contributions. Links to the coverage can be found at www.ess.ucla.edu/news



View of central segment of Mars' Valles Marineris.

AXEL SCHMITT'S RESEARCH REDEFINES SOUTHERN CALIFORNIA AS VOLCANICALLY ACTIVE

Using new techniques developed at UCLA and the University of Texas in Austin, Axel Schmitt found evidence that a chain of small volcanoes, known as the Salton Buttes and located at the edge of the Salton Sea, has erupted much more recently than previously thought.

These recent results redefine the Southern California region as volcanically active. According to the Smithsonian Global Volcanism Program, which sets widely held scientific standards for this field, a volcano is considered "active" if it has erupted within the last 10,000 years.

"We have evidence of a very recent eruption in the Salton Trough," Schmitt said. His research was published in the journal Geology. "The previously known eruption age (widely recognized by archaeologists) is 30,000 years with large uncertainties. Our result is 10 times younger and 50 times more precise." According to the new research, the Salton Butte volcanoes were formed between 2,010 and 2,950 years ago.

"Young volcanic rocks can be difficult to date with conventional methods, one reason being that plant remains suitable for carbon dating are absent in a desert environment," Schmitt explained. So to determine the age of the obsidian, Schmitt used zircon, a silicate mineral that contains uranium. The age of a volcanic eruption can be determined by measuring the decay of this uranium, he explained. And to measure this decay, Schmitt used the national ion microprobe facility that is maintained in Earth and Space Sciences.

Prof. Schmitt in the field at the Salton Buttes

Schmitt worked in conjunction with archaeologists at the Cotsen Institute for Archaeology who puzzled over why obsidian tools were not found dating from earlier times in the Salton Sea area. This research now indicates that the obsidian probably came from the recent volcanic eruption. Previously, scientists had thought the source of the obsidian was covered by Lake Cahuilla, the Salton Sea's predecessor.

DAVID JEWITT WINS BOTH SHAW AND KAVLI PRIZE IN SAME WEEK

Professor David Jewitt was awarded the Shaw Prize in astronomy and the 2012 Kavli Prize in astrophysics for his role in the 1993 discovery of the Kuiper Belt beyond Neptune. Each prize came with a $1 million award.

The discovery of the Kuiper Belt, which contains more than a billion objects and was once believed to be empty space, has fundamentally changed the modern perception of the solar system.

That the Shaw and Kavli prize committees independently made the same choice in the same week is "pretty excellent," Jewitt said.

Jewitt shared the Shaw Prize with Jane X. Luu, a scientist at the Massachusetts Institute of Technology's Lincoln Laboratories who was his former graduate student. The Kavli Prize was awarded to Jewitt, Luu and Michael E. Brown of the California Institute of Technology, "for discovering and characterizing the Kuiper Belt and its largest members, work that led to a major advance in the understanding of the history of our planetary system."

Jewitt also directs UCLA's Institute for Planets and Exoplanets. His research focuses on the exploration of the small bodies of the solar system, which provide clues to the origin and evolution of planets.

DISTINGUISHED PROFESSOR GERALD SCHUBERT RETIRES

On June 8, 2012, the department gathered to honor Professor Jerry Schubert and to recognize his extraordinary contributions to geophysics.

Dozens of faculty, students, and staff filled Slichter 3853 and the crowd spilled into the corridor as ESS Chair Craig Manning, Professor Margaret Kivelson, and Professor Bob McPherron spoke of Schubert's accomplishments as a scholar, teacher, and leader in the field.

Manning said that the first piece of advice he gives all his graduate students is to read Geodynamics, a seminal book co-authored by Schubert and D. L. Turcotte.

Schubert retired after 42 years of service to the department, including a term as chair. He is a member of the National Academy of Sciences, a Harry Hess Medalist of the American Geophysical Union, and a fellow of the American Academy of Arts and Sciences. He continues to conduct research and has been recalled as an emeritus research professor.

J. WILLIAM SCHOPF RECEIVES PALEONTOLOGICAL SOCIETY MEDAL

For outstanding contributions to the science of paleontology, J. William (Bill) Schopf was awarded the Paleontological Society Medal at this year's meeting of the Geological Society of America. This award, presented by the world's oldest and largest such professional society, is especially meaningful to Schopf because his father, paleobotanist James M. Schopf of The Ohio State University, received the same medal in 1978, the two medals being the first awarded to a father-son pair.

The medal also highlights a stunning achievement of the department: Schopf is the sixth ESS recipient of the Paleontological Society Medal -- following in the footsteps of Preston E. Cloud (1971), Helen Tappan (1982), Alfred R. Loeblich, Jr. (1982), Daniel I. Axelrod (1990) and Bruce Runnegar (2010) -- and, joined by biologist-vertebrate paleontologist Everett C. Olson (1980), the seventh member of the UCLA faculty to receive this prestigious honor.

PROFESSOR LEON KNOPOFF HONORED WITH BRONZE PLAQUE AND PORTRAIT

Joanne Knopoff pays tribute to her late husband, Dr. Leon Knopoff.

On August 8, 2012, the department gathered to remember the legacy of Professor Leon Knopoff, distinguished professor of physics and geophysics, research musicologist, and former director of the Institute of Geophysics and Planetary Physics. In addition to ESS faculty, staff, and students, faculty from other departments came to honor their colleague.

A plaque in Knopoff's honor was unveiled outside of his longtime office, Geology 1805. Also, a striking color photo portrait of Knopoff has been hung outside of 3853 Slichter to honor his 14 years as director of IGPP.

Leon Knopoff, an internationally renowned scientist who served on UCLA's faculty for 60 years, was known for his significant research contributions in physics, seismology and music, as well as his exceptional teaching and international collaboration.

During the ceremony, Dean of Physical Sciences Joe Rudnick and Professors Paul Davis and David Jackson commented on Knopoff's outstanding contributions to science. Joanne Knopoff, Dr. Knopoff's widow, also spoke movingly of their many years together. Some family members attended, including son Michael Knopoff and daughter Dr. Rachel Knopoff and her husband Dr. Russ Dickerson. Another Knopoff daughter, Katie Knopoff Wadley, her husband Adrian Wadley, and their 3 1/2 year old son Charlie, who live in San Francisco, were unable to be present.

Joanne Knopoff and daughter Rachel.

PAUL MERIFIELD RETIRES

Alumni from the 70s, 80s, and 90s returned to campus on October 8, 2012 to honor the extraordinary teaching and mentoring they had received from Adjunct Professor Paul Merifield.

In addition to a very successful career as a professional geologist, Merifield taught engineering geology in the department for several decades, thereby preparing dozens of UCLA students for careers in the geosciences.

Professor Emeritus Don Carlisle, who taught Merifield when was a student, spoke of Merifield's history in the department and his impressive professional accomplishments. Several generations of ESS students, faculty, and staff then laughed at stories of past field trips.

Prof. Merifield (right) with his wife Ruth and Dr. Don Carlisle.

DAWN MISSION LEAVES VESTA AND HEADS TOWARD CERES

Launched Sept. 27, 2007, the Dawn Mission spent more than a year investigating Vesta, which is in the doughnut-shaped asteroid belt between Mars and Jupiter. Dawn orbited Vesta and observed the protoplanet's surface beginning in July 2011. It departed in September 2012.

"Vesta has been recording the history of the solar system from the beginning — more than 4.5 billion years ago," ESS Professor Chris Russell said. "We're going back further than ever before on the surface of a body." Russell heads the science team that has the lead role in analyzing and interpreting the data from Dawn.

Dawn has a high-resolution camera, a visible and near-infrared mapping spectrometer, and a gamma ray and neutron spectrometer to reveal the abundance of elements such as iron and hydrogen, possibly from water, in the soil.

The study of Vesta, however, is only half of Dawn's mission. The spacecraft is now on its way to the dwarf planet Ceres, where it will conduct a detailed study of Ceres' structure and composition. Vesta and Ceres are the most massive objects in the main asteroid belt between Mars and Jupiter. Ceres, the largest object in the main belt, could harbor substantial water or ice beneath its rock crust. Dawn will rendezvous with Ceres and begin orbiting in 2015, and will conduct studies and observations for at least five months.

ESS STUDENTS SUPPORTED AND RECOGNIZED THANKS TO ALUMNI GENEROSITY

The Harold and Mayla Sullwold Scholarship *is given to provide fellowship support to graduate students who are pursuing investigations in the Earth sciences. The criteria are excellence in academic performance and research potential. The 2012 winners are:*

Jessica Watkins

Jessica Watkins, whose adviser is An Yin, completed an undergraduate degree at Stanford University in geological and environmental sciences. She is currently pursing a Ph.D. in geology. She chose UCLA because of "the opportunity the ESS department provides me to apply terrestrial geology concepts to the study of planetary surfaces. I also felt welcomed and at home in this departmental community." Her current research focuses on investigating the geology and tectonic geomorphology of Mars. The goal is to use the current understanding of processes on Earth to inform the study of the processes producing various features on the surface of Mars. Of particular interest are the initiation and transport mechanisms of landslides in Valles Marineris.

Watkins explains how she ended up as a geologist, "Since I was eight years old, I have wanted to explore the vast mysteries of our solar system as an astronaut. I have always been intrigued by the challenge of understanding the unknown and answering questions that have never been answered before. From my first geology class, I knew this field would enable me to pursue my passion for the hands-on exploration of the world around me and of the solar system."

Upon completion of the Ph.D., Watkins hopes to continue researching planetary surface processes at NASA or a similar institution or laboratory. "I would love to be involved with a planetary mission, with the eventual goal of becoming an astronaut."

Michael Lawson

Michael Lawson, whose adviser is Ed Rhodes, did his undergraduate degree at UCLA, graduating with a B.S. in geology in 2008. He then served the department as a staff member for IGPP, building spacecraft and ground-based magnetometers for the Space Physics Center, focusing on smaller (and cheaper) Cube-sat style missions.

Lawson started a Ph.D. in geology two years ago, studying Optically Stimulated Luminescence (OSL) with Ed Rhodes. OSL is a dating tool for sediments which uses quartz or feldspar grains to determine the length of time sediment has been buried in the Earth. He hopes to apply this method to tectonics, specifically fault-trenching studies which have relied upon radiocarbon dating, but which are limited in time. OSL can measure much older sediments. "Having a greater understanding of the history of fault motion on the many major faults local to Los Angeles would help us gauge the probabilities of future earthquakes that might endanger Los Angelenos," says Lawson.

Lawson chose to come to UCLA because he grew up in Southern California and wanted to stay close to home. He grew up hiking in the Verdugo Mountains, and frequently went camping with his family, which may explain his choice of geology as a field of study.

"For my first real geology class, we had a field trip to Rainbow Basin, which shocked me that a UCLA course would actually let the students go hiking and camping! My future is undecided, but I am leaning towards becoming a professor, to teach young, up-and-coming geologists and to continue my research."

Scan the code to watch a video of Jessica Watkins expounding on her dreams of being an astronaut.

ESS STUDENTS SUPPORTED BY ALUMNI GENEROSITY

Emma Rainey - Sullwold Scholar

Emma Rainey, whose adviser is Abby Kavner, went to the University of Minnesota and received dual degrees in physics and geophysics. She later received an M.S. in planetary science from Caltech and is currently enrolled in our Ph.D. program studying geophysics. She chose UCLA for its reputation as a world-class and diverse research institution. She also likes living in Los Angeles because there are opportunities nearby for collaboration with scientists at other institutions, and a lot of great job opportunities in science and technology fields.

Rainey works in the field of high-pressure mineral physics. She explains, "Most of the Earth is made of up materials under very high pressures, and so in order to understand the dynamics and evolution of the Earth over time, we need to understand how Earth materials behave under these extreme conditions."

Rainey's interest began with geology and grew as she discovered a love for physics and math. The interdisciplinary field of mineral physics was a perfect fit. "It includes aspects of physics, chemistry, materials science, and engineering, among others. And my own research allows me to do a little bit of everything, including experimental measurements, data processing, and theoretical and computational modeling."

Her dissertation will focus on the heat budget and thermal evolution of Earth's core and mantle. Whatever field she ends up in, Rainey plans to continue applying her technical skills to solve interesting, challenging problems.

Scan the code to watch a video of Hao Cao discussing how he discovered planetary physics at UCLA

Jiang Liu - Sullwold Scholar

Jiang Liu, whose adviser is Vassilis Angelopoulos, studied space physics at Peking University and is now pursuing a Ph.D. in that field here at UCLA. He chose UCLA because it has the best space physics program in the world. Liu's interests include dayside magnetosphere dynamics (reconnections, flux transfer events) and magnetotail dynamics (substorms, magnetotail transients), all important subjects of the THEMIS mission. Liu gives credit to his grandfather, a scientist, for helping him choose science as a career. One advantage of space physics, Liu explains, is that it doesn't require laboratory experiments which he never liked in middle-school chemistry and physics.

For his dissertation, Liu studies the current systems of magnetotail dipolarization fronts (DFs) and the DF's interaction with the ambient magnetotail plasma. "The DFs are a type of magnetotail transient closely related to substorms and play a key role in magnetotail convection. The understanding of DFs is crucial to solving the substorm controversy which is one of the major problems in space physics research."

Liu plans to find a post-doc after graduating so he can continue his research.

***The Waggoner Prize** honors the memory of UCLA alumnus Eugene B. Waggoner (BA '37, MA '39). The department gives the award annually for overall meritorious performance by an ESS Ph.D. Candidate. This year's recipient is:*

Hao Cao

Hao Cao, whose adviser is Chris Russell, completed his undergraduate degree in geophysics and space physics at the University of Science and Technology of China (USTC), in Hefei, China. He is now in the Ph.D. Program in ESS which he chose because "it has one of the best programs in Earth, planetary, and space sciences."

Cao is particularly interested in understanding the origin of planetary magnetic fields. He explains that this field is closely related to the interior structure and evolution of the host planets. His dissertation will focus on understanding Saturn through observing and modeling its magnetic field. Cao plans to be a full-time scientist.

ERNST CELEBRATION, DECEMBER 2011

By Professor Craig Manning

Former colleagues and students participated in a field trip in celebration of Ernst's career.

Cherished ex-faculty member Gary Ernst turned 80 last year. ESS teamed up with Stanford University and the Geophysical Laboratory of the Carnegie Institution of Washington to celebrate his warm spirit and lasting scientific contributions. Events spanned the weekend of December 3-4, just before the 2011 AGU meeting. The events proved to be something of a reunion for many past UCLA graduate students. Saturday saw presentations by a host of UCLAers during science sessions at Stanford. After a lavish dinner and roast on Saturday evening, most participants managed to make their wake up calls and participate in a field trip to some of Gary's favorite Franciscan localities in the Bay Area. Gary asked that anyone so inclined donate to our W. Gary Ernst Fellowship at UCLA. We gratefully acknowledge the many who did so. Once again, Happy Birthday Gary, and thanks for all you have done for ESS!

ESS UPGRADES AND EXPANDS COMPUTER LAB

By Steve Salyards

Undergraduate major works on remote-sensing in upgraded computer lab.

With the beginning of the 2012 academic year, the department unveiled an expanded advanced ESS computing classroom in a larger and more user-friendly room in the basement of Geology.

This laboratory is used for instruction in upper-division classes involving computer applications where dedicated or specially configured machines are needed by the students. The additional space has allowed an increase in the number of available computers so that popular classes, like Prof. Gilles Peltzer's remote sensing class, can now accommodate more students. The computers can be booted into either Linux or Windows operating systems with current industry standard software such as ENVI, LabView, and Generic Mapping Tools (GMT). This is of course in addition to the standard productivity tools, such as word processing and computation packages like MatLab.

Jon Aurnou's undergraduate computing class, ESS Prof. 71, will also make use of the special facilities. With the dedicated machines and work space, the students will have better opportunities to practice data acquisition and instrumentation control. They will also learn to analyze the data they collect with the LabView package.

There are also adjoining rooms that will provide space for storage of instructional computing equipment, new printing facilities, and server operations. The space will also allow ESS majors improved access to computers around the clock.

EXPLORING YOUR UNIVERSE

The experimental space physics group of Professor Vassilis Angelopoulos, including six LAUSD teachers participating in the Heliophysics Education Program, volunteered at EYU.

Award-winning, internationally renowned UCLA scientists explained their craft to over 2000 children, teens, and parents from around the city at Saturday, November 10th's fourth annual Exploring Your Universe event.

Exploring Your Universe was spearheaded by the graduate student members of Astronomy Live!, a public outreach program in the UCLA Department of Physics and Astronomy. They collaborate yearly with various south campus departments to turn the Court of Sciences and surrounding areas into a top-notch science museum, with hands-on scientific demonstrations, lectures, and other workshops designed to use UCLA's impressive resources to bring science to the community. ESS staff member Gary Glesener devoted many hours to turning the third floor of the Geology building into a playground for scientists young and old.

Grad student Dallon Stang shows crossbedding in a sandstone to a young EYU participant.

THE TRANSIT OF VENUS

Hundreds of students gather together with telescopes and viewfinders.

ESS hosted roughly 1,500 people on Janss Terrace on June 5, 2012 to get a glimpse of an astronomical phenomenon that won't happen again until 2117. It was the second and the last transit of Venus of the 21st century. There were several telescopes and other solar sight devices staffed by knowledgeable members of the department and students from the campus organization Astronomy Live!

During the public viewing, the relatively cloudless skies gave the campus community a clear sighting of our neighboring planet as it passed between the Earth and the Sun. Venus was easily viewable from Earth as a black dot moving almost imperceptibly across the solar surface.

In the 18th century, the transit of Venus was particularly important because scientists could use it to calculate the distance between the Earth and the Sun, the fundamental yardstick used to measure the size of the universe. Expeditions were organized around the world to view the 1769 transit and the observations were used to calculate the distance, known as the astronomical unit. In an updated version, many of those gathered on Janss Terrace in June were trying to submit measurements of the interior ingress through an app installed on their iPhone or Android. The data would then be transmitted to a global database just as occurred in the 18th century.

A BRIEF HISTORY OF GEOLOGY 20 AND ESS 20: 1974-2012

By Professor Emeritus Clarence A. Hall

During the early to mid-1970s, the department of geology offered a popular paleontology class (Geology 115), taken by both geology, other science and non-science majors. Professor Norman Gary Lane (whose research emphasis was the study of crinoids) and I were the initial instructors who taught this class jointly. Professor J. William Schopf would later join us to each teach a third of the class. Two field trips were offered and students were required to participate on one of the two trips. The most popular trip, with as many as 115 students participating, was to Arrow Canyon, with its mid- to-late Paleozoic fossils, approximately 75 miles east of Las Vegas, Nevada. During one of these field trips, in the early 1970s, the students were asked how many had never been outside of the Los Angeles region (more than half had not), and how many had not been out of the state of California, ~80% had not. Based on this response, Lane and I decided to try and encourage the then botany and zoology departments to join with the geology department to offer an off-campus "Field Quarter" in botany, zoology, and geology. Members of the botany and zoology departments declined, citing the heavy workload for such a class.

To benefit the education of students, Gary Lane was adamant that the geology department should offer a class in natural history, one that would include numerous field trips (field-based learning) to different areas of California outside the Los Angeles region. He suggested that we prevail upon Professor Mildred Mathias to allow us to audit her upper-division botany course in plant taxonomy (the classification and naming of plants). He reasoned that, with a working knowledge of botany, combined our knowledge of geology, biology, and paleobiology, we could offer a natural history class in the geology department (later to become the Department of Earth and Space Sciences in 1976). We took Professor Mathias' course in 1972. In 1973 Lane was offered a professorship at the University of Indiana, near the fossil-rich strata central to his research, and he left UCLA. Also in 1973, I began to develop a course outline for a Geology 20 class and I obtained funding from the Office of Instructional Development for this new innovative class. I designed labs and six or seven field trips for the class. The first class was first offered in 1974. It was offered from 1974 to 1983 and again from 1994 to 2012. The 11-year hiatus was during my tenure as Dean of Physical Science.

Students Enrolled in Geology 20/ESS 20 who became geology or earth science majors (my apologies if I missed some:): 1974: Bob Shamlian, Jon Vaitli, Charles Wacker III; 1976, Kata McCarville; 1977, our own (now Professor) David Paige; 1978, Gary Strathern; 1995, Kimberly Cooper; 2001, Stephanie Kyriazis; 2002, Steve Skinner; 2006, Kin Sio (Corliss); 2007, Kristina Walowski and Cary Wicker; 2009, Miles Bolkin; 2010, Margaret Odum, and 2012, Corinna Casey.

The current version of ESS 20, taught in spring quarter, takes students to Yosemite, Death Valley, San Jacinto Mountains, San Diego County, and Santa Barbara County.

Prof. Hall with the ESS 20 class of 1983

DEGREES AND AWARDS

COMMENCEMENT - JUNE 16, 2012

Valedictorian and Joseph Murdoch Scholarship recipient, Kevin Thomas Coffey

DOCTOR OF PHILOSOPHY

Matthew Martin Armentrout
Ye Gao
Michael David Hartinger
Jennifer Eileen Kissinger
Catherine Amy Macris
Carolyn Rosemary Nugent
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Natalia Solomatova

Presenting the undergraduate degree candidates of 2012.

AWARDEES

JOSEPH MURDOCH SCHOLARSHIP

Presented to undergraduate students for scholastic excellence, preferably with majors in mineralogy and petrology

Kevin Thomas Coffey

JOHN & FRANCES HANDIN SCHOLARSHIP

Undergraduate scholarship for academic excellence, endowed by department alumnus John W. Handin (B.A. '42, M.A .'48, Ph.D. '49) and his wife, Frances.

Natalia Viatcheslavovna Solomatova

Profs Craig Manning and Kevin McKeegan with the Ph.D candidates

CLEM NELSON SUMMER FIELD AWARD

This award to summer field students honors the memory of the late Professor Clem Nelson.

Brian James Anderson
Vanessa May Brillo
Amanda Helen D'Elia
Daniel Jeffrey Dolan
James Hiro Eguchi
Samantha Kelly Gebauer

CLARENCE A. HALL, JR. SUMMER FIELD AWARD

This award to summer field students honors Professor Emeritus Clarence A. Hall, Jr..

Joel David Kane
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Steven A. Norton
Debbie Shay
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We express our sincere gratitude to our donors. Donor funds have a huge, positive impact on our students and our research. Especially in this time of budgetary challenges, your philanthropy benefits all aspects of our work in the field, including our undergraduate summer field program, our departmental vehicles, and field research by our graduate students. Donor funds are even used to improve our teaching in the classrooms by providing upgraded technology, and by underwriting student projects and demonstrations.

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Xiaojia Zhang

1958

Richard J. Proctor, '58, writes: Fifty-four years since attending classes at UCLA, but 54 years well spent: After obtaining his masters under John Crowell and Don Carlisle, including field trips with legendary Tom Dibblee, Richard worked for the Metropolitan Water District of Southern California (MWD), becoming Chief Geologist. In 1975 Caltech profs Richard Jahns, Clarence Allen and Barkley Kamb asked Richard to be a Visiting Associate Professor of Geology at the Institute—a daunting but rewarding job! In 1980 he became a consultant, specializing on his experience in building tunnels, which allowed him to consult on the L.A. Metro subway, and to work with fellow consultant Charles F. Richter. Much of his consulting has been in expert witness testimony and interesting projects, including a new runway in the Virgin Islands, and a wine cave in Napa Valley. He and his wife Ena love to travel and have visited 32 countries. Richard has been active in professional organizations, being president and Honorary Member of the American Institute of Professional Geologists and the Association of Engineering and Environmental Geologists, and was twice a recipient of the Geological Society of America's Burwell Memorial Award for technical writing. Richard thought, "I know how to write technical papers, so why not try writing a screenplay?" His script is about Tom Horn, the real lawman who turned outlaw, and his relationship with Richard's grandfather, the Wyoming sheriff who hanged him. The script got into the hands of Warren Beatty, who invited Richard to lunch! (To be continued.)

1970

Bill Neill, '70, writes: I graduated from UCLA in August 1970, after summer field class in the Cambria area north of San Luis Obispo with Clarence Hall and Gary Ernst. Classmates that year included Bernard Hallet, Bill Krebs, Mark Nahabedian, and Bill Renison, among others.

After graduating from UCLA, I went to Stanford and was enrolled there 5 years for an M.S. degree because my interests changed several times — from ore deposits to volcanic geology to sedimentary geology. Ray Ingersoll arrived two years later, so he and I overlapped by three years. My thesis was on the early volcanic history of the Yellowstone "hot spot" when it was active in southwest Idaho.

After two summers with Texaco on Alaska's North Slope in 1971-72 and two summers of field work in Idaho, in 1975 I left Stanford and was hired by Texaco in Los Angeles. After two years as a Texaco geologist, I switched to petroleum engineering and obtained a second M.S. degree from USC in 1980. I spent most of my career as a reservoir engineer at Unocal's Research Center in northern Orange County, specializing in computer simulation of oil and gas reservoir development.

I departed Unocal in late 1998 -- when the price of crude oil dropped to $10/barrel -- and commercialized my hobby which was control of invasive non-native weeds in natural areas. Since 1999, I have been self-employed as a professional herbicide applicator, active with two Weed Management Areas, the California Invasive Plant Council and California Native Plant Society.

1972

Jerry Treiman, B.S.'72, writes: I have been a geologist with the California Geological Survey (CGS, previously California Division of Mines & Geology) since 1977. My work has focused mainly on the identification and evaluation of active faults for the State's Alquist-Priolo Earthquake Fault Evaluation Program. I am fortunate to have also had the opportunity to investigate fault rupture associated with numerous significant earthquakes in southern California over the past 25 years, including the Superstition Hills ('87), Landers ('92), Northridge ('94), Hector Mine ('99), and Parkfield ('04) earthquakes. Collaboration with USGS and other colleagues on the recent El Mayor-Cucapah earthquake (2010) resulted in a new joint CGS/USGS publication (http://pubs.usgs.gov/of/2010/1333/) as well as a comprehensive report on active faults in the Yuha Desert area (CGS Fault Evaluation Report FER-254).

I have enjoyed keeping in touch with some of my past professors, including Don Carlisle at our Quadra Island reunion in 2006 and Paul Merifield at his recent retirement function.

Gary D. Rosenberg, Ph.D. '72 , writes: The Geological Society of America has just named me recipient of the 2012 Mary C. Rabbitt Award for "outstanding contributions to the understanding of the history of the geological sciences in the United States and abroad." This is the History and Philosophy of Geology Division's highest award, and is named for a lady with an unlikely name whose accomplishments were made at a time when women were not allowed to take classes with men at many universities. Upon her death, she gave a generous bequest to the GSA History and Philosophy of Geology Division.

Gary D. Rosenberg, Ph.D.

Also, I have retired and have moved back to my hometown to continue my writing.

(He is Associate Professor Emeritus, Indiana University-Purdue University, Indianapolis.)

Jerry Treiman '72 at the Paul Merrifield retirement celebration.

1973

John Oehler, '73 has just finished a book entitled "Aphrodesia" which Kirkus Reviews describes as a "A brilliant, engaging twist on the traditional crime novel." John is the author of two other novels as well, which are based on his life of adventurous travel, "While working in Egypt, I spotted a potential way to break into the Egyptian Museum in Cairo. The break-in is now portrayed in a chapter of 'Papyrus.' My experiences in the remote highlands of Venezuela led to 'Tepui.'" John is married to alumna Dr. Dorothy Oehler who works at Johnson Space Center and was this year's Distinguished Alumni lecturer.

John Oehler navigates the Yangtze river.

1985

Karen McBride, '85 continues to travel the world giving talks and enjoying life with her fiancé, Marcello Coradini. Karen writes: On our way to Venice airport to spend the weekend celebrating Marcello's 60th birthday in Greece with all his Italian and French colleagues and friends. We plan on having a big celebration back in LA.

1988

Kenneth Kelsch, '88 continues to live in Kuwait and is proud to report that his children are growing up. His children are now 19 (Kelsey), 17 (Austin) and 15 (Hayley).

Karen McBride'85 with her fiancé, Marcello Coradini.

2012

Vanessa Brillo, '12 writes: I'm currently working as a lab researcher in Prof. Tripati's lab. I'm currently applying for grad school and hopefully start next year.

Kevin Coffey, '12 writes: I am starting a master's degree in geology with Ray Ingersoll, doing sedimentology and paleotectonics along a portion of the Punchbowl fault in the San Gabriel Mountains.

Michael Hartinger, Ph.D.

Mike Hartinger, Ph.D. '12 writes: I'm currently researching Ultra Low Frequency waves in the Earth's magnetosphere at the University of Michigan (Atmospheric, Oceanic, and Space Sciences Dept). I'm funded through the NSF Atmospheric and Geospace Sciences postdoctoral fellowship.

Jeff Portwood, B.S. '12 writes: I recently began working for an internet company, FindTheBest. We are a startup based in Santa Barbara, CA, that runs a website, www.findthebest.com, that focuses on unbiased, data-driven comparisons to help individuals make quick and informed decisions. While it may not seem directly applicable to Earth and space science, I deal with an extremely large amount of data each and every day, something I would not be capable of handling were it not for my research opportunity with Jonathan Mitchell.

Belinda Roder, M.S. '12 writes: I am now living in Kailua, Hawaii on Oahu. I work for CH2M Hill, and am a geologist supporting several environmental consulting projects in Hawaii. I am loving life after grad school, although I miss everyone in the department!

Rachel Stevenson, Ph.D. '12 writes: I'm now a NASA postdoctoral fellow at JPL, studying small bodies with data from the Widefield Infrared Survey Explorer (WISE) mission. I'm focusing on the physical and chemical properties of comets and working primarily with James Bauer.

Natalia Solomatova with Prof. Ed Rhodes

Johanna Hoyt, M.S. '12 writes: After graduating, I started an internship with Aera Energy, and I'll be starting a full time position as a Geologist there in December!

Natalia Solomatova, B.S. '12 writes: I'm studying high pressure mineralogy at Caltech using computational and experimental methods.

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Emeritus Professor Bob McPherron joined a team from Virginia Tech at the South Pole for the deployment of several magnetometer stations on the polar cap.