GEOLOGY NEWS

Department of Geological Sciences • University of Colorado at Boulder • 2005 - 2006

Advisory Board 2005-2006

"It's Not My Fault"..... Structure students examining a well-exposed normal fault near Moab, Utah

Letter from the Chair

Mary Kraus

This has been my third year as Department Chair. I have one year remaining in my term, and the department will be determining the next chair during the coming academic year. I have been elected as incoming President of SEPM or the Society of Sedimentary Geology, which is an international society whose 4,500 members are dedicated to the dissemination of scientific information on sedimentology, stratigraphy, paleontology, and environmental sciences. I serve as President-Elect this year and, in April of 2007, become President of the organization for a year.

The department received excellent news this spring with the release of the 2007 US News and World Report's rankings of America's Best Graduate Schools. The PhD program in geology at CU was ranked 18th in the nation. Only nine AAU public universities ranked higher than CU in this category. The previous ranking of Geology Departments by USN&WR was done in 1999. At that time, the department was not listed in the top 30.

A key reason for our increased rating is the excellent new faculty that have been hired over the past seven years. This year we continued that trend by hiring Alexis Templeton in the area of geomicrobiology and low temperature geochemistry. Currently we are in the process of recruiting a high-temperature geochemist. This spring Dena Smith and Jaelyn Eberle were successfully reappointed as Assistant Professors, and Eric Small was awarded tenure and promoted to Associate Professor. In addition, Bob Anderson and Anne Sheehan were both promoted to Full Professor.

We graduated 25 undergraduate geology majors with BA degrees, as well as 15 MS and 7 PhD students during this last calendar year. At the moment we have approximately 100 undergraduate majors and 70 graduate students. In addition to educating our majors, the department plays a large role in the science education of undergraduate students at CU with approximately 4,000 undergraduate students enrolled in geology classes last year. To improve the education of both the non-major undergraduate students and our undergraduate majors, the department is embarking on the Science Education Initiative. As described more fully in an article later in this newsletter, the department was chosen to be the lead department in this initiative, which will last for five years.

The second annual field trip for all new graduate students was held in August, the weekend before classes started. The Advisory Board, which was instrumental in initiating this trip, voted to name the trip in honor of Bill Bradley. Last fall the first day of the trip led by Professor Karl Mueller, fo-

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cused on geology between Boulder and Rocky Mountain National Park. As is becoming the tradition, the group spent the evening at the Mountain Research Station. Members of the Advisory Board were instrumental in trip logistics. Dave and Mary Peterson, Jeff Abbott and Matt Silverman organized the dinner Saturday night, and with the help of graduate student Quentin German, did the grilling and the frying of catfish. Advisory Board members provided funding for the food and liquid refreshments for the trip. The second day of the trip was led by faculty Bob Anderson and Alan Lester. The dinner was a terrific event with many faculty and other alumni (Stan Dempsey and Neil Fishman from the Advisory Board) in attendance. We welcome any alumni who would like to participate this year. The dates are August 26 and 27. Shell Petroleum has kindly offered to fund the 3rd Annual Bill Bradley Field Trip.

The Advisory Board met twice this year as usual. The board has several new members including: Ben Lowry (BA 2004), who is currently in Denver working for Water Management Consultants; and Colette Hirstius (MS 2004), who works for Shell Petroleum in New Orleans. Neil Fishman has replaced Matt Silverman as Chair of the Board. Matt provided excellent leadership of the Advisory Board for several years, and, although he has stepped down as chair, he continues to participate as a board member. A third new member – Pat Williamson – will join the board in the fall of this year. I also want to thank Jeff Abbott and Ron Stokes who have rotated off the board. Board member Dawn Kaback, together with Alan Lester, provided two career nights for the graduate and undergraduate students. Dawn invited local geologists to discuss career opportunities in their own special areas of interest and to describe their own career development and what they felt were the key aspects of their educational background that allowed them to take advantage of different job opportunities. I personally want to thank board members Matt Silverman, Dave Peterson, Jerry Mather and Anna Wells for their hard work in ensuring that the Bruce Curtis Graduate Fellowship was brought to $500,000. This is our first endowed fellowship for full support of a graduate student, although we also have many smaller endowed graduate fellowships that provide partial support for students. We hope to develop a few more endowed full fellowships for graduate students in the future.

Our major fundraising effort this past year has been the Bill Braddock In-the-Field Fund. I am happy to report that the fund now stands over $200,000. This endowment is now providing funding for student field trips, either within academic courses or as special department events, with the goal of keeping students “in the field.” The last page of this newsletter lists the names of those who have donated to our program over the last calendar year. To all these individuals and corporations I express my thanks on behalf of all the faculty, students and staff of the department. Please consider making a gift to the department so that our students can have the same quality educational experience today that you had when you were a student. This newsletter includes an envelope for sending a gift to the department and the last page has a form for identifying the fund to which you would like to donate. In addition to the Braddock and Curtis endowed funds, the department is always in need of general gifts funding. General gifts support a number of important departmental programs including student travel to conference, the undergraduate mentor program, and activities of the undergraduate Geology Club.

Submit your alumni news @ www.cugeology.org click on the “alumni web” link

Professor Alexander F. H. Goetz Retires

Professor Alexander Goetz (67), a member of the department, Fellow of CIRES and Director of the Center for the Study of Earth from Space since 1985, has retired from the University but will continue his association with the department and CIRES as an Emeritus Professor.

Alex, the son of a physics professor, grew up in Pasadena, CA and after high school spent 2 ½ years in Schloss Salem on Lake Constance in Germany and obtained an Abitur, the diploma required for entrance to a German university. He chose to return to the US and applied to Caltech as a sophomore in physics. Having been so immersed in German, he failed the English exam and spent a year at Pasadena City College catching up. Alex spent his last 2 undergraduate years at Caltech, then entered its graduate school in geophysics, receiving his MS in 1962 and his PhD in planetary science, Caltech's first, in 1967.

Building on his thesis study of infrared emission spectroscopy of the Moon, Alex went to work for Bellcomm, a subsidiary of ATT Bell Labs, which had the systems responsibility for the Apollo missions. There he was involved in landing-site excursion planning and was the principal investigator for multispectral photography experiments on Apollo 8 and 12. The need to do digital image processing to extract information from the Apollo images led him to JPL, then the only place on Earth capable of such processing.

Alex joined JPL in 1970 and worked there in many capacities. He was a member of the Grand Tour Science Planning Team, which eventually spawned the Voyager Mission that is still alive today. Not wanting to wait so long for data, he proposed for ERTS-1, later named Landsat-1 and, along with his co-investigator Gene Shoemaker, mapped the geology of the Coconino Plateau from space. Alex was hooked on remote sensing of the Earth and went on to be a PI on Landsats 2 and 7, Skylab, the second flight of Shuttle, and the new millennium mission EO-1.

Coming to CU in 1985, Alex built from scratch the Center for the Study of Earth from Space (CSES). He attracted significant funding from the W.M. Keck Foundation that allowed for acquisition of equipment, post-docs and student research assistantships, as well the renovation of 13,000 sq ft of the old Pharmacy building now known as Ekeley Science. He taught introductory geology, remote sensing of the environment, remote sensing digital image analysis, remote sensing field measurement and various seminar subjects.

Alex is best known for his work in imaging spectrometry, now known as hyperspectral imaging. He is one of the originators of the technique and will be honored with a special session at the IEEE Geoscience and Remote Sensing Society annual meeting in Denver this August.

Complete retirement is not in the cards for Alex, at least for now. He is looking forward to being engaged full-time at Analytical Spectral Devices Inc. in Boulder, a company he co-founded in 1990 that now has over 40 employees. They manufacture portable spectrometers and spectroradiometers that are used in over 50 countries for remote sensing research. The company has grown from its remote sensing roots into the commercial marketplace, and now builds process control instrumentation for the pharmaceutical, food and wood products industries. As Chief Scientist, Alex is charged with finding and validating additional commercial applications for the technology, and as Chairman of the Board he is spearheading a liquidity event that will allow him to go sailing in the far corners of the globe.

Faculty Activities

John T. Andrews was elected as a Fellow of the American Geophysical Union (Paleoceanography and Paleoclimatology Focus Group) "for his seminal contributions to the Quaternary history of North America and the North Atlantic Basin." The citation below was written by Raymond S. Bradley, who is Director of the Climate System Research Center, Department of Geosciences, University of Massachusetts:

This award recognizes the contributions Andrews has made in publishing innovative and thought-provoking papers at the cutting edge of the discipline, in three principal areas:

- studies of the behavior of the Laurentide Ice Sheet
- papers on relative sea level history (methods, theory, and modeling) and
- research on ice sheet ocean interactions (including Heinrich events).

Andrews has been a driving force behind the Institute of Arctic and Alpine Research, helping to establish its international reputation for excellence in science; he also served as Chairman of the Department of Geological Sciences, at the University of Colorado. He was elected President of the Quaternary and Geomorphology Division of GSA and President of the American Quaternary Association (AMQUA), and he provided leadership on several initiatives of the National Science Foundation and the National Academy of Sciences.

John Andrews has inspired an entire generation of students, many of whom have gone on to establish successful programs at major institutions and universities elsewhere, spawning their own cadre of students. Thus John's diaspora of highly-trained students and their "offspring" form a truly enormous group of students in Quaternary Geosciences.

He has been the recipient of several awards including the Kirk Bryan Award of the Geological Society of America and the Distinguished Service Award of the University of Colorado. He received a DSc from the University of Nottingham in 1978, largely based on his pioneering work in climate change, and in 1995 he was elected as a Foreign Member of the Norwegian Academy of Science and Letters.

Gifford Miller reports in from Australia. During my year-long (2005-2006) Faculty Fellowship I have been based at the Research School of Earth Sciences at the Australian National University. It's been great to catch up with old friends here, and have large periods of uninterrupted time to work on various aspects of my ongoing research programs. I spent August and September in the field in central Australia, filling out our series of ancient bird eggshells, and adding to our growing collection of fossil wombat jaws, whose teeth provide a complementary story to the dietary reconstructions based on the eggshells. Another two-month field season is scheduled for June and July of this year.

I spent from late March through April of 2006 off the coast of Africa on the island of Madagascar, starting a new research campaign. Our goal is to track the timing and cause of extinction of Aepyornis, the giant elephant bird. At over 3 m high and with an estimated mass of 500 kg, Aepyornis was the largest bird that has ever lived, and its eggs were nearly the size of a bushel basket, holding 7 liters. Aepyornis became extinct less than 1000 years ago, and overlapped with early human colonizers of Madagascar for at least 1000 years. Accompanied by PhD student Steve DeVogel, my Australian colleague John Magee, and Jean-Luc Schwenninger from Oxford University, as well as three Malagasy colleagues and food and field gear for a month, we all crammed into an ancient Land Rover and traversed the spine of Madagascar from Antananarivo, the capital city, south to the southern tip of the island, at Cape St Marie. We worked the remote southwest coast for nearly a month, making over 300 collections of eggshells between Talaki and Tulier. Besides being rewarding scientifically, it was a new cultural experience. We often stayed in Tandroy villages, where outsiders are rarely seen. Despite a near complete absence of material goods in these villages, everyone we met was friendly, helpful and generous. We even managed to see several different lemur species. It was quite an experience.

Gifford Miller received the Easterbrook Distinguished Scientist Award at the Geological Society of America's (GSA) 2005 annual meeting. The award is given annually by the Society's Quaternary Geology and Geomorphology Division to an individual who has shown unusual excellence in published research, as demonstrated by a single paper of exceptional merit or a series of papers that have substantially increased knowledge in Quaternary geology or geomorphology. Recent recipients include Wallace Broecker, Victor Baker, Richard Alley, Tom Dunne and Edward Keller. Miller's former advisor and INSTAAR fellow John Andrews wrote the citation, with contributions by nineteen individuals from several countries and with a variety of connections.

With a number of others (geologists, geophysicists, and even a meteorologist) from other universities and from China, **Peter Molnar** has begun a four year multidisciplinary study to examine how the Tibetan Plateau has grown northeastward in the past 10-20 million years and how that growth has affected regional climate. A number of observations can be interpreted to suggest that the plateau may have grown higher and expanded northeastward and eastward beginning near 10 Ma. Moreover, others suggest both that the Indian monsoon strengthened and that loess deposition over northern China began near 8 Ma. We seek quantitative constraints on how the plateau grew, for instance, by an outward migration of the locus of thrust faulting, by a lurch out by a larger amount, or perhaps by flow within the crust (channel flow). Concurrently, we seek a precise knowledge of environmental changes, including not just loess deposition, but also precipitation and temperature. We hope not only to learn the geologic and environmental history of the region, but also to gain an understanding of how geodynamics and climate are linked.

Giff Miller collecting eggshell from eolianite near Talaki, south coast Madagascar

Ramilisonina, our lead guide, and a reconstructed *Aepyornis* egg

Miller team boarding our pirogue (dugout from a single tree) that we hired to take us to islands in search of eggshells (honestly!)

Alexis in a steam vent at Hawaii Volcanoes National Park

Alexis Templeton joined the Department in August 2005 as a new assistant professor in the areas of low-temperature geochemistry and geomicrobiology. Alexis is new to Colorado, but she is finding a "home" quickly since almost all of her immediate family is currently settled in Evergreen and Denver.

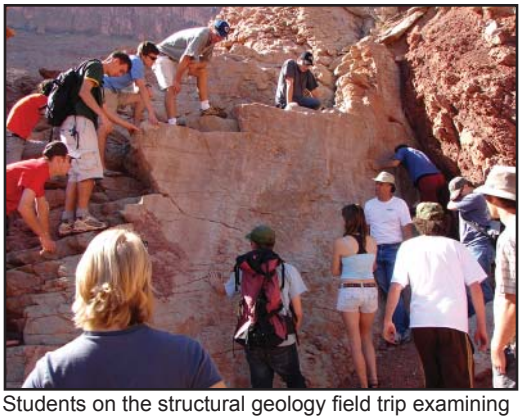
After growing up in England, Alexis moved back to the U.S. to pursue a liberal arts education at Dartmouth College. As a major in the Earth Sciences Department, she was first introduced to the Rocky Mountain region through field projects in Montana, Wyoming and Utah. After graduating in 1993, Alexis continued to assist field programs in Wyoming while she pursued her master's thesis between Dartmouth and the University of Otago in New Zealand. Her field work was located along active fault zones and hydrothermal systems in the Southern Alps near Mount Cook, where she used stable-isotope geochemistry to understand fluid flow regimes during rapid uplift. After completing her MS degree in 1995, Alexis moved to California to work for two years at the Center for Isotope Geochemistry at the Lawrence Berkeley National Laboratory. Her job was to determine how isotope tracers could be used to measure in-situ rates of bioremediation of petroleum hydrocarbons. This work introduced Alexis to laboratories in Geology, Geography, Soil Science, Microbiology and Environmental Engineering at Berkeley and set the stage for her future interests in interdisciplinary science.

Alexis then moved across the Bay Area to Stanford University to pursue a PhD (2002) investigating heavy-metal speciation and biomineralization processes at biofilm-mineral interfaces. She subsequently moved to the Scripps Institution of Oceanography in La Jolla, CA for a NSF Postdoctoral Fellowship focused on rock eating (lithotrophic) microbial organisms and the biological mechanisms involved in the alteration of volcanic glasses at Loihi Seamount, Hawaii. This research recently expanded to another highly active submarine volcano, Vailulu'u Seamount in American Samoa, during two cruises in 2005.

Alexis is excited to join in the Department and participate in its rapid growth in the areas of Surface Processes and the broadly defined Hydrogeosciences. Her research group works to determine how the energy available from the disequilibrium between minerals and fluids (i.e. weathering reactions) may be harnessed for microbial growth in highly oligotrophic environments. In turn, she tries to unravel the complex interplay between abiotic and microbially-mediated reactions in the transformation of geological materials and aqueous solutes. In particular, Alexis will continue to investigate microbial geochemistry in the subsurface and deep ocean. Long-term (5-10 year) projects at Loihi and Vailulu'u Seamounts have been established with external collaborators, where Alexis' focus is on the isolation of metal-oxidizing bacteria and the identification of chemical biosignatures and biomineralization products in the rock record. Her work also involves the development of new high-resolution synchrotron-based spectroscopic approaches that can be used to study chemical dynamics during water-rock interaction. Upon arrival at CU, Alexis has joined Bruce Jakosky and Steve Mojzsis in the NASA-funded Center for Astrobiology. She is also currently trying to develop local subsurface geochemistry and geomicrobiology projects at Henderson Mine, CO. Henderson is an active molybdenum mine near the continental divide that is currently one of two remaining sites for a potential NSF-funded "DUSEL" (Deep Underground Science and Engineering Laboratory). Alexis will teach geochemistry at the undergraduate and graduate level and she hopes to also develop new courses in geomicrobiology and environmental geosciences.

Alexis' partner was independently hired into the Department of Chemistry and Biochemistry through CU's new Biotechnology Initiative, and they are happily settling into Boulder with their one year old son Ethan. They hope to one day introduce him to the joys of skiing, climbing and camping in the local region.

Greg Tucker instructs a geology field trip to Pawnee Buttes



Students on the structural geology field trip examining a normal fault at the entrance to Arches National Park

"In The Field"

Your continued support of "In The Field" programs helps provide students with the funds needed to experience geology in a real and up-close environment. Please consider supporting "In-The-Field" programs.

Taphonomy Seminar (GEOL5700) Field Trip

Graduate students and a few undergraduates took part in the Geology 5700 field trip that is supported with funds from the department. The field trip was a two day trip with two nights of camping. The class went to collect insects and learn paleoecological sampling methods. They were at a site located North of Parachute, CO, where they collected samples from the Parachute Creek Member of the Green River Formation (approx 45 Ma). They collected lots of great insects, some with 3-D preservation.

- Dena Smith

Students Erin and Jason taking measurements around Parachute Creek Member during the Geol 5700 field trip

Students on the Planetary Geology field trip investigating the KT-boundary

Planetary Geology Field Trip

Bruce Jakosky and Bob Pappalardo led a field trip to visit sites of relevance to planetary geology in the southwestern U.S. in September. The purpose was to see a wide variety of different types of geological processes here on Earth and to discuss their occurrence on other planets in our solar system. This will become an annual field trip, with different trips going to Meteor Crater, Death Valley, Yellowstone, Hawaii, and other sites. The trip this year included the Great Sand Dunes, Shiprock, the Grand Canyon, Meteor Crater, Sunset Crater volcanic field, the Painted Desert, and the K/T boundary layer. Together, they represent different aspects of impact physics, aeolian processes, tectonic processes, volcanic activity, chemical weathering and alteration, and sedimentary processes. Especially for many of the planetary science students, field trips such as these provide an exposure to planetary processes that is quite different from the typical research in front of a computer screen. The accompanying photo shows the group at the K/T boundary layer near Raton in southern Colorado. A good time was had by all!

Please Support The Bill Braddock Geology In-The-Field Endowment

New Aspen Seismic Station Provides Improved Colorado Earthquake Data To CU-Boulder, U.S. Geological Survey

CU grad students Gaspar Monsalve and Tom de la Torre, and undergrad intern from Colgate Univ. Christina Viviano at the Snowmass seismic station install

A new University of Colorado /US Geological Survey collaborative seismic station was installed near Aspen in June 2005. The station uses a satellite link to continuously relay data to the National Earthquake Information Center in Golden, Colo.

Project coordinator **Anne Sheehan**, a professor in CU-Boulder's Department of Geological Sciences, said the station is sensitive enough to record earthquakes around the world.

"This seismograph station will greatly improve our ability to monitor earthquakes in Colorado," Sheehan said. "It will be used to improve our understanding of the deep structure beneath the Colorado Rocky Mountains through use of seismic imaging techniques. It's also an important teaching tool for our geology and geophysics classes at CU-Boulder."

"This is a very good station for detecting earthquakes in Colorado," said Waverly Person, Director of the U.S. Geological Survey's National Earthquake Information Service. "We need more stations like this one in order to really determine the seismicity of the state."

The Snowmass station is the third Advanced National Seismic System station to be installed in Colorado. The other two are located in Idaho Springs, Colo., and at Great Sand Dunes National Monument.

The station's data are scanned by computer and by human analysts to locate earthquakes from Colorado and the surrounding region. During its first few weeks of operation and testing, the station recorded a magnitude 2.8 mining-induced earthquake that caused damage at a mine near Paonia, Colo., according to Sheehan. The station also records far away earthquakes, such as the devastating earthquake in Pakistan from Fall 2005. Seismograms from this station and others can be found on the web at http://heli.cr.usgs.gov/ and through the IRIS Data Management Center.

Located high in the Snowmass ski area, the station consists of a seismometer, which measures ground motion, a digitizer that records data and a satellite dish to send information to the National Earthquake Information Center in Golden. The station is powered by car batteries that are recharged by solar panels.

Funding for the CU-Boulder seismometer and digitizer was provided by the National Science Foundation. Telemetry and installation costs for the new station were paid for by the USGS. The Snowmass station is the first to be run cooperatively between CU-Boulder and the U.S. Geological Survey.

CU Science Explorers teaches natural hazards curriculum throughout Colorado

Julesburg sixth-grade pupil Larry Ray Ponsetta looks at a homing device while students from his team look on. The device will locate a beacon hidden in the Northeastern Junior College classroom, designed to replicate a skier buried under an avalanche. The Julesburg team was one of many areas schools attending the Science Explorers program hosted by the University of Colorado at Boulder at NJC in January 2006.

CU Geological Sciences Professor **Anne Sheehan** and graduate student **Heidi Reeg** teamed with the CU Science Explorers program this year to bring workshops on natural hazards to middle school teachers and students throughout Colorado. The CU Science Explorers program is a professional development program for rural and urban Colorado teachers. The program is in its 19th year, and in many rural locations where Science Explorers is conducted, it is one of the few opportunities that teachers have to enrich their curriculum with hands-on activities. The scientific theme for the workshop varies each year. The topic of natural hazards was selected to build upon the enhanced public awareness of this topic after the devastating 2004 tsunami in Sumatra. The curriculum included tsunamis and earthquakes, wildfires and avalanches and was taught in 17 different locations in Colorado, including plains, western slope, front range, and San Luis Valley communities. Over 350 teachers and 1800 students participated in the workshops. Sheehan served as Science Advisor for the program, which involved reviewing the curriculum, providing materials and content from her research and contacts, and training the Science Explorers instructors. Sheehan also helped secure funding for the program through the broader impacts portion of two of her NSF grants and through a CU Outreach council grant. Heidi Reeg worked on the hazards curriculum development as part of her NSF GK12 graduate fellowship.

CU Science Education Initiative

by David Budd

A new science education initiative (SEI), spearheaded by Professor Carl Weiman of Physics, was recently funded by the Provost's and President's offices at CU-Boulder. The goal of the SEI is to fundamentally change the way science is taught at the university to majors and non-majors alike. The department enthusiastically endorsed the initiative (particularly the junior faculty) and David Budd spearheaded a successful proposal to fund the department as one of four participating science units on campus.

There are four basic components to the new initiative, each of which has been established by education researchers as a key mechanism for improving science education. The first is to identify the specific learning goals of a course. Traditionally faculty define the content of their courses (the topics on which they intend to lecture) but the new initiative will ask faculty to take that a step farther and define their learning goals. For example, can the faculty define what they want their students to be able to do at the end of each lecture, unit and course?

With the new initiative, all faculty teaching a course will explicitly decide the level of cognate thinking they want students to achieve, and communicate their expectations to the students at the start of the unit. Whether it is low-level memorization of facts or definitions, or higher-level analysis and problem solving, both faculty and students will be working towards the same clearly-defined learning goals.

The second component of the initiative is assessment of what students are indeed learning. Daily assessment will use technologies such as in-class "clickers," which are devices students use to answer questions posed during lecture. The results for the entire class are immediate tallied as an assessment of student comprehension. Good clicker questions are those that explore whether students are comprehending concepts. Students can also be encouraged to collaborate with their neighbors to analyze and answer the clicker questions (i.e., peer learning). If a large number of students choose a wrong answer, then the instructor knows immediately that the concept is not being understood and they can try again. They can also engage the students in a discussion in order to explore what particular aspect of a concept is confusing. This type of real-time feedback to the teacher allows them to adjust the pace of their class and insure that specific learning goals are being achieved before moving on to new ones. Homework, exams, and pre/post semester concept inventories are other means of assessment that will be examined. Although most of these are already employed, the key is revising the assessments to make sure they correlate well with the learning goals.

The third component of the initiative is the development of new technologies and tools that enhance the learning experience for the students, and make faculty teaching time more productive and efficient. On line communication tools, interactive technologies and other methods that move the learning process to a more comprehensive, hands-on experience is the goal. Perhaps the most exciting tool under consideration is the development of on-line interactive animations that will help students comprehend key principles. Although there are many types of existing animations that demonstrate geologic processes or Earth history, the goal is to develop interactive tools that allow students to explore feedbacks within geologic systems. A plate tectonic animation might challenge them to predict what happens if spreading rates are doubled, and the students can then see if their predictions (such as transgressions across continents, enhanced subduction rates, increased mountain building, increased weathering rates, and increased draw-down of global CO2 due to the weathering) come true. Making the predictions and seeing the inter-relationships reinforces the concepts being taught far more effectively than static pictures in textbooks!

The final component of the initiative is the dissemination and archiving of learning goals, teaching assessment tools, best practices, and new technologies that are developed over the five-year span of the initiative. This component seeks to insure that all new approaches and material that are proven to work become a standard part of all undergraduate science courses on a permanent basis. These insights will be shared at the Departmental and University level, and we anticipate that our learning experiences will ultimately be disseminated to the broader Geoscience community as well.

If successful, the SEI will result in a classroom that is quite different from those of today or yesterday. No longer will the professor just present a lecture augmented by 35 mm slides (or PowerPoint images) while students diligently scramble to record every precious word. Rather, the students might have responded the night before through an on line system to a set of questions regarding the assigned reading or an interactive exercise. That on line system will allow the professor to compile that information in time to refocus that day's classroom activities on those parts of the content that were hard for the students to understand. After a 15-minute discourse on those points, a series of clicker questions and small group discussions will help the students comprehend the key concepts. The class might end with a new geologic problem that is presented to the students, one which they must use their new-found understanding to solve. Its solution might be done that evening within small groups working in a dedicated chat-room environment. Humanity and social science majors, as well as geology majors, will be DOING geology rather than just listening and reading about geology in their classrooms.

The science education initiative is funded for five years, as its creators believe it will take that long to fundamentally change teaching cultures within the university, as well as develop and fine tune all components of the initiative. Geological Sciences is the only unit that has signed on to implement the initiative across its entire curriculum. Two post-docs will be joining the department to assist the faculty in all aspects of the initiative. In the fall of 2006, the emphasis will be on the two largest enrollment courses --- Geology I and Geology II (Physical Geology and Historical Geology). An initial set of learning goals will be defined, clicker questions developed, and homework reassessed. Students will be interviewed before, during and after taking the course to learn what they are actually learning and how they are thinking about the material. In subsequent years these practices will be actively integrated into our upper-division courses as well.

The entire process holds great promise to increase the level of learning at all levels of the undergraduate curriculum and put the department at the forefront of geoscience education reform. David Budd is coordinating the effort and promises to keep the alumni informed of our progress in future issues of the newsletter.

Thank You Donors!

Your Generosity is Greatly Appreciated

EMARC News

On April 10, EMARC sponsored a reception at the AAPG Convention for five alumni/friends of EMARC who received career honors and awards during the past year. We repeat these distinctions here for all alumni. Our heartiest congratulations to them, all of whom are most deserving.

Bob Graebner, Physics '48 and Engineering Physics '54, received two career awards. Last November, Bob received the Maurice Ewing Medal from the SEG, their highest award that is given for career achievements in applied geophysics. In May, Bob received an honorary doctorate from CU for his career achievements in applied geophysics and important contributions in geosciences education (see photograph). Bob spent most of his career working at GSI, where he helped develop 3-D seismic reflection data in the 1960s, and rose to corporate VP. He worked with Halliburton from 1988-1993. He continues to work part-time at the SEG in Austin with Bob Hardage. He served on the Department Advisory Board from 1987-1992, and was responsible in 1991 for the first donation of 2-D and 3-D seismic data for EMARC GOM consortium.

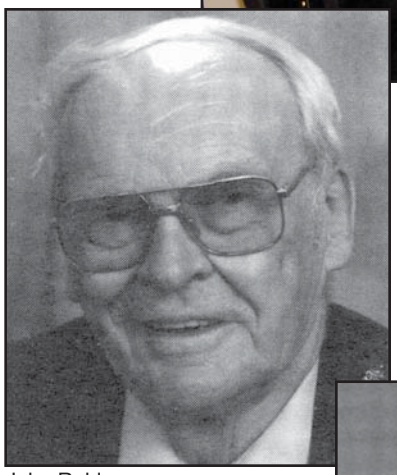
John Rold, BS '49, MS '51, received Honorary Membership in AAPG. A native of Salida, John worked for the California Company (Chevron) after graduation until 1969, when he became the State Geologist and head of the Colorado Geological Survey. He helped regenerate and build the survey into an important state agency. He worked in that capacity until "retirement" in 1993. John served on the Department Advisory Board from 1987-1992.

Gil Mull, BS '57, MS '60, worked most of his career on North Alaskan Geology with Richfield, Exxon, USGS, and the Alaska State Survey (Fairbanks). He retired in 2002 and moved to Santa Fe (i.e. more winter light). In May, Gil was feted in Anchorage at the Pacific Section AAPG/GSA meeting with a one-day symposium on the evolution of the Brooks Range dedicated to him.

William Hay, Professor Emeritus, received the William Twenhofel Medal, the highest award of the SEPM, given for lifetime achievement in sedimentary geology. Bill taught at several universities before joining CU Museum and faculty in 1982. He taught here until 1997. Bill is a renaissance man in geosciences, with diverse research interests ranging from the development of the first classification for calcareous nannoplankton to modeling global sediment budgets.

Bob Mitchum is not an alumnus of CU, but has had strong informal ties to EMARC. He donated several labs, work exercises and data in 1990, taught a 2-day short course in October 1992, and in January 1994 he spent one day reviewing and commenting on the initial research results of the first GOM research consortium. He has continued to review papers and help EMARC from 1994 to the present. In April, Bob received the Sidney Powers Medal, the highest honor from the AAPG.

Bob Graebner



John Rold

William Hay

Bob Mitchum

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Alumni Receptions and Society Meetings

Two alumni receptions were held in conjunction with professional society meetings. The first was the alumni reception associated with the GSA annual meeting, which was held in Salt Lake City in November of 2005, and the second was associated with the annual AAPG meeting, held in Houston in April 2006. The department will host alumni receptions at both meetings in 2006/07.

The 2nd Annual CU at the Brown alumni reception was held February 23rd at the Brown Palace Hotel. Approximately 85 alumni, faculty and friends of the department attended this event. The department thanks St. Anselm Exploration not only for underwriting the event this year, but also for organizing the festivities. The second annual CU in Houston was held this year in association with NAPE (formerly North American Prospect Expo). About 30 alumni and friends of the department attended this event, which was organized by advisory board members Tim Garfield and Anna Wells. The pictures below show the festivities at CU at the Brown and CU in Houston.

Both CU at the Brown and CU in Houston will be held for the third times in 2007. Please mark your calendars for January 31 (CU in Houston) and February 22 (CU at the Brown). All alumni and friends of the department are invited to these receptions.

Graduate Student Fellowship Endowed To Honor Bruce Curtis

by Matt Silverman

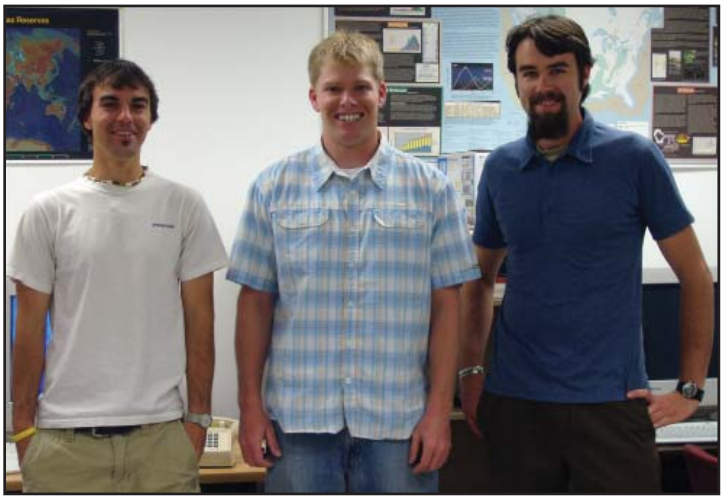
Five hundred thousand dollars has been raised to permanently endow the Bruce Curtis Graduate Student Fellowship in Geological Sciences at CU. Financial contributions by over 150 students, friends and colleagues of Prof. Curtis and the department, as well as other individuals, foundations and companies within the oil and gas industry were crucial to realizing this goal.

Curtis profoundly affected the careers and lives of generations of petroleum geologists in the Rocky Mountain Region. Through decades of service at CU and in the oil industry, he educated and inspired hundreds of students and professionals. Curtis also authored, edited and co-edited several important volumes, including the 1958 RMAG Guidebook on the Pennsylvanian and AAPG's 1968 landmark publication, Natural Gases of North America.

A Denver native, Curtis completed his graduate studies in Geology at CU and Harvard, following service in the U.S. Navy in World War II. He worked as Rockies Regional Exploration Manager for Conoco until 1957, when he began three decades of teaching, research and department leadership at CU. During that period he taught subsurface methods, geology of organic fuels, and related subjects to hundreds of undergraduate and graduate students. Dr. Curtis directed scores of graduate theses, many focused on exploration and production topics that are still vital today. He retired in 1983 and still lives in Boulder.

The first two student recipients were Quentin German and Greg Robertson, who were funded by the Curtis Fellowship in 2005-06. Greg worked with Shemin Ge on a thesis project titled "An investigation of tectonic deformation on water levels in Devils Hole, Death Valley National Park, Nevada." He graduated this May and will be working for ExxonMobil. Quentin is working with Matt Pranter on outcrop analysis of the high net-to-gross interval of the Williams Fork Formation, Plateau Creek and Main Canyons within the Piceance Basin of western Colorado. Following his graduation in August, Quentin will also be working for ExxonMobil. The recipient of the Curtis Fellowship for 2006-07 is Nick Sommer, who is studying with Matt Pranter. Nick will be a second year MS student during the coming academic year.

Bruce Curtis Endowment recipients: Quentin German, Greg Robertson and Nick Sommer



Several gifts to the Curtis Fellowship were made in memory of Gerry Grocock, who was instrumental in the fundraising process before his untimely death.

Among the many generous donors were the following: BP Corporation North America, Inc., The Bayless Charitable Fund, Bruce D. and Marcy H. Benson, Ensign Oil & Gas Inc., Samuel Gary, Jr., Carolyn Grocock, Aaron Harber, Anthony and Liz Brigham Moores, David C. Peterson, Quicksilver Resources Inc., Stephen M. Strachan, and Anna Wells and Michael Zakroff.

Deepest thanks also go to: American Geophysical Corporation, Donald Lee Baars, Terry P. Bailey, Baker Consultants Inc., Fred G. Baker, Roland Leon Baldwin, Scott Alan Bennett, Benson Foundation, Benson Mineral Group, Inc., Dudley W. Bolyard, Tom Box, William L. Bredar, Ethel H. Brende, John B. Brock, David A. Budd, Scott F. Burns, James Arthur Bush, Douglas R. Callier, Joanne Lonay Chapa, Douglas K. Childs, Circle M. Energy Limited, John R. Coash, Frank G. Cooley, Terry R. Courtright, Bruce F. Curtis, Rene G. Daigre, The Denver Foundation, Denver Geophysical Wives, Warren W. Dickinson, Robert E. Dippo, Robert D. Dougherty, The Dowling Foundation, John D. Edwards, Don L. Eicher, EnCana Corporation, Eric K. Ericson, Jerome Arlan Eyer, Carol Fielding, Neil Fishman, William Flores, Stephanie Gaswirth, Grocock-McDill Trust, Clare Gregg, Earl G. Griffith, David G. Griggs, Thomas L. T. Grose, Michael C. Hallock, O. Winston Hampton, John Conrad Harms, Richard Cundiff Hepworth, Erich Carl Heydweiller, David Jerome Hindman, S.B. Hixon, Morgan Hocker, Houston Geological Society, William Ervin Hupp, Kathryn L.K. Huwaldt, Patricia Irwin, Janet L. Kagie, E. Ann Kirkpatrick, Louise M. Kiteley, Georgia G. Kofoed, Kathy Knutson Kreidler, William D. Lancaster, Laura Lee Lang, Lario Oil & Gas Co., Mark W. Longman, Gerald G. Loucks, Steve Ludington, Marsha Morton Mander, Anson Mark, Stephen Keith Marks, John A. Masters, Terry J. Mather, Barry McBride, Betty A. McGregor, Ronald, C. McLaughlin, Dorothyan S. McMaster, Michael B. Morgan, David G. Moysey, D. Keith Murray, National Geological Services, Inc., G. A. Nelson, Connie W. Nowlan, Gary Alan Nowlan, Ocean Energy Inc., Bonnie O'Donnell-Painter, Chris A. Oglesby, Giorgio Pannella, Parson Oil, LLC, Elmer S. Parson, Mary Reimer Parson, Hannah Flora Pavlik, Frank A. Penney, James Edward Peterson, James B. Phipps, Charles W. Pollard, Forrest G. Poole, Patricia Clark Poole, Ranspot Family Trust, Henry W. Ranspot, RDD Explorations Company, Joan B. Reinhardt, Kurt Reisser, Robert Reginald Remy, Gene E. Richards, James Graham Ritchie, Lois Y. Rittenhouse, Rivington Capital Advisors LLC, John W. Robinson, James P. Rogers, John W. Rold, Samuel Gary Jr. & Associates, Inc., Donatella and Mark Scanniello, Edwin C. Schuett, Seismic Micro-Technology, Inc., Anne F. Sheehan, John Small, William R. Smith, Anna Warshawsky Stafford, Donald S. Stone, Strachan Exploration, Inc., Robert F. Sweeney, James P. Syvitski, Regina Tempel, Texas Crude Operator, Inc., Janet Bauder Thornburg, TKM Resources LLC, John Todd, Laura Day Triplett, David Mason Uhlir, Venture Resources, Inc., Theodore R. Walker, Valerie Kindred Walker, Dederick C. Ward, Paul Weimer, K. C. Weiner, Joseph L. Weitz, Chandler T. Wilhelm, Robert Ralph Wilhour, and Pamela Leigh Wolf.

To make an additional contribution to this endowment, your check may be made payable to the CU Foundation and sent to:

The Bruce Curtis Graduate Student Fellowship
c/o Department of Geological Sciences
Campus Box 399
Boulder, CO 80309-0399

Front Office News

We have had a shift in the front office staffing. Marge Atkinson retired December 1, 2005. Carrie Simon moved from the front desk position to the Graduate Program Assistant Position vacated by Marge. We welcome Barbara Amaral to the Administrative Assistant front desk position. Barbara is an upbeat person and performs her job very well. Joanne Brunetti continues as our Accounting Tech and Beth Hanson continues as Office Manager and Assistant to the Chair.

We look forward to assisting alumni and friends of Geological Sciences to find answers to appropriate questions they have regarding the department, faculty, former faculty, students and staff.

The front office maintains its position as the "nerve center" in the department. Our dedicated staff of four continues its task of endeavoring to meet the administrative needs of Geological Sciences faculty and students in an efficient, friendly and timely manner.

The Departmental Office can be contacted by:
Phone: 303-492-8141
FAX: 303-492-2606
EMAIL: geolinfo@Colorado.Edu

Our office staff: Barbara Amaral, Beth Hanson, Joanne Brunetti, Carrie Simon

AAPG Chapter News

The AAPG student chapter had 15 undergraduate and graduate student members this year. Quentin German served as President and Matt Pranter is the faculty advisor. Nick Sommer will be the president in 2006-07.

The year started with a large barbeque that was aimed at increasing the interest of undergraduate students in the chapter. The chapter held monthly or bi-monthly meetings monthly during which the group planned upcoming events including the AAPG annual convention, RMAG/SEPM functions, field trips, oil-company interviews and company rendezvous at the University of Oklahoma and University of Wyoming. Members also gave presentations on summer internship work and/or current research.

Activities of the group can be found at:
http://spot.colorado.edu/~pranter/aapg.html.

Undergraduate News and Awards

During the past academic year, undergraduates in the Department of Geological Sciences have taken advantage of a number of special opportunities. Our students have attended group meetings for information on graduate school and careers; many students have participated in some form of undergraduate research (with faculty, graduate students and/or research personnel); there have been three students graduating "with distinction" (for exceptional overall GPA above 3.75); six honors theses were defended. Additionally, several seniors began working with a new program in which they served as teaching aids, working alongside graduate teaching assistants in our introductory geology lab classes. And finally, all of our students are to be commended for working through one of the more demanding major programs in the College of Arts and Sciences—a program that entails over twice as many total credit hours as many other majors. **by Alan Lester**

Greg Diefenbach was awarded both the Hartmut Spetzler and Kenneth Johnston Outstanding Senior award. Greg is continuing with his undergraduate mentorship program with John T. Andrews, and will use his project with John to write an honors thesis in 2006-07. The project is focused on X-Ray diffraction studies of marine sediment cores from Iceland and the Labrador Sea. Greg and John have established patterns of sedimentation at several sites over the past 10,000 years, and these correlate with global temperature fluctuations. This summer, Greg will establish a detailed error analysis of the methods and equipment used in the research, followed by a sediment source comparison of two cores sites.

Cheryl Mnich graduated in May summa cum laude. Cheryl received the 2006 Neal J. Harr Outstanding Student Award from RMAG. She completed an honors thesis with Chuck Stern titled "Thirtynine Mile Volcanic Field: A Geochemical Study." This study examined the origin and source of one of the more mafic volcanic lavas found at the Thirtynine Mile volcanic field and to show what that origin and source information says about Mid-Tertiary magmatism in general. The mineralogy and geochemical compositions of the rocks were determined and compared to those of the San Juan volcanic field and the Laramide Age Table Mountain volcanic rocks near Golden, CO.

Angela Cook graduated summa cum laude in May. She completed an honors thesis with Shemin Ge titled "The Scale Dependency of Hydraulic Conductivity within the Elkhorn Fault Zone." This thesis investigated the relationship between hydraulic conductivity and the volume of rock being tested. Her results support the concept that hydraulic conductivity is dependent on the amount of rock being tested. Angela also received an Outstanding Women Student in Geosciences award from the Association of Women Geoscientists.

Graduate News and Awards

Tim Bartholomaus, who is working on an MS degree with Bob Anderson, received a CU Beverly Sears Grant and a GSA Grad Student Research Grant to support his thesis research. Tim is working on "The Pressure Theory of Wave Ogive Formation: Another Look on The Gates Glacier, Alaska."

Maureen Berlin, also working with Bob Anderson, received an NSF Graduate Research Fellowship this year. Maureen also received an NCALM (National Center for Airborne for Laser Mapping) seed grant. Maureen's project is titled "Landscape Evolution on the Roan Plateau."

Ben Burger has received two fellowships to fund his research titled "The vertebrate faunal transition across the Paleocene-Eocene boundary in the southern Piceance Creek Basin, Western Colorado." One is a GSA Award; the second is the Ogden Tweto Memorial Grant from the Colorado Scientific Society. Ben is studying with Jaelyn Eberle. In addition, Ben will be participating in ExxonMobil's Geoscience Recruiting Wyoming Field Seminar on the integrated basin analysis of the Bighorn Basin, Wyoming from May 14th to May 20th.

Alex Dutchak received a William H. Burt Award (through the CU Museum) for his field project this summer entitled "The mammalian faunal shift across the Wasatchian-Bridgerian Boundary." Alex is working with Jaelyn Eberle.

Ethan Gutmann received an Outstanding Student Paper Award for his talk at the Fall 2005 AGU meeting. The talk was titled "Investigating the use of surface temperature time series to determine soil hydraulic properties for land surface models."

William (Stan) Hammon received honorable mention for the NSF Graduate Research Fellowship. Stan is working with Geoff Dorn.

Rachelle Richmond also received honorable mention for the NSF Graduate Research Fellowship. In addition, Rachelle is this years' recipient of the Jack Edwards Graduate Fellowship Award from the department. Rachelle is a student with Anne Sheehan's group.

Spring graduates. May 12, 2006

Nick Sommer, who is working with Matt Pranter on the Williams Fork Sandstone, has been awarded the Peter W. Gester Memorial Grant from the AAPG Grants-in-Aid of Research Program. Nick is also the recipient of the 2006-2007 Bruce Curtis Fellowship (see article on page 12).

Ian Sweeney received a grant from the Geological Society of America to support his research with Karen Chin. He also received the W. O. Thompson Award from the department.

Dylan Ward, a student of Bob Anderson, received a GSA Outstanding Student Research Award for his proposal entitled "Quantification of deformation rates in the Alaska Range northern foothills through dating of progressively deformed stream terraces." Dylan also received an NCALM (National Center for Airborne for Laser Mapping) seed grant. Dylan is working on "Controls on Bedrock Channel Development in Hard-capped Escarpments: Implications for the Processes of Cliff Retreat."

Daniel Woody, who is working with Mary Kraus, has been awarded the Alexander and Geraldine Wanek Award Grant from the AAPG Grants-in-Aid of Research Program. Daniel was also awarded a scholarship from Shell Petroleum and the Dudley and Marion Bolyard Award from the Rocky Mountain Association of Geologists. Daniel is working on changes in alluvial architecture in response to climatic changes associated with the Paleocene-Eocene Thermal Maximum or PETM.

Brian Yanites has been selected to receive a Department of Defense: National Defense Science and Engineering Graduate (NDSEG) Fellowship. Brian is advised by Greg Tucker and is working on "Landscape Response to Active Orogenesis: Controls on Basin Denudation and Stream Incision Patterns in Taiwan."

Shell Petroleum Graduate Research Awards

Shell provided funding that is helping seven graduate students complete research projects for their degrees. The students and their projects are listed below. Also listed in parentheses are the faculty advisors for each student.

Tim Bartholomaus (Bob Anderson) – "The Pressure Theory of Wave Ogive Formation: Another Look on The Gates Glacier, Alaska."

Phil Jacobsen (Eric Small) – "The influence of vegetation on the soil moisture profile in two sub-alpine ecosystems of the southwestern US."

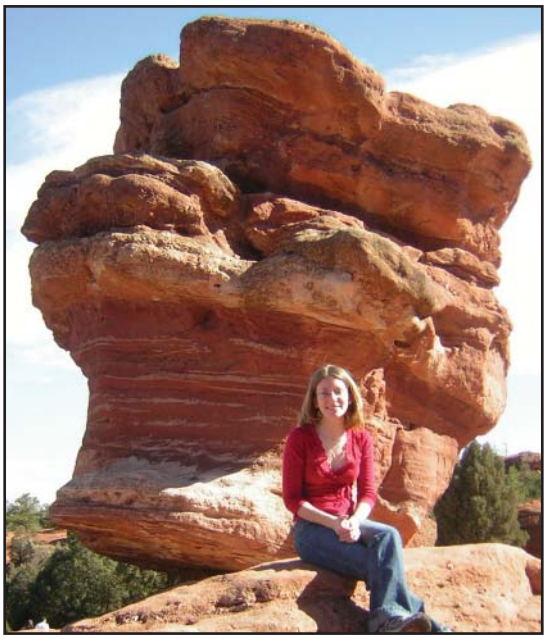
Nick Sommer (Matt Pranter) – "Reservoir characterization of the Williams Fork Sandstone."

Ian Sweeney (Karen Chin) – "Genesis of fossil tree stumps in the Moreno Hills Formation (Cretaceous) of New Mexico."

Dustin Trail (Steve Mojzsis) – "Inclusion mineralogy of pre-4.0 Ba zircons from Jack Hills, Western Australia and conditions on early Earth."

Daniel Woody (Mary Kraus) – "Control of climate on alluvial architecture at the Paleocene-Eocene Thermal Maximum (PETM), Bighorn Basin, Wyoming."

Degrees Awarded
(Spring 2005 - Spring 2006)


Undergraduate Amanda Nahm

B.A. Geology Majors

Jacob P. Bauer
Mary Brady
Geofrey A. Burghardt
Tara L. Chesley
Angela Cook
Andrea H. Daihl
Erica Nicole Evans
Matthew D. Farrar
David R. Frank
Paul F. Garvin
Jacob Gelfand
Ryan Harris
Erica Johnson
Alice Kaminski
Max W. Knop
Michael Burnett Leibovitz
Katherine Mickelson
Cheryl Mnich
Julie Myers
Amanda Nahm
Christina Newman
Alex Potvin
Jill Marie Pursley
Forest Logan Reider
Daynna Rodosovich
Bret T. Salazar
Paul Siratovich
Jesse Stewart
Anna Wagner
Jacob Walter
Jeb H. Watts
Tim L. Weber

M.S. Candidates Graduating with Degrees

	Advisor	Thesis Title
Raquel Cepeda	Weimer	3-D Seismic Stratigraphic Interpretation of the Upper Miocene to Lower Pleistocene Deep-Water Sediments of the Thunder Horse-Mensa Area, Southern Mississippi Canyon, Northern Deep Gulf of Mexico
Gary Fager	Goetz	Comparison of Quickbird and the Airborne Visible Infrared Imaging Spectrometer for wildland fire defensible space identification
Melissa Fallin	Kraus	Carbon Isotope Stratigraphy of the Morrison and Cloverly Formations and Assessment of Vertical Color Change in the Morrison Formation, Coyote Basin, Wyoming
Nicole Feldl	Bilham	Crustal Deformation Across the Nepal Himalaya
Katherine Kahn	Ge	Analysis of the shallow groundwater system in an alpine basin: Handcart Gulch, Colorado
Katherine Knox	Farmer	The Never Summer Igneous Complex: Evolution of a Shallow Magmatic System
Greg Robertson	Ge	An investigation of tectonic deformation on water levels in Devils Hole, Death Valley National Park, Nevada
John Roesink	Weimer	Sequence Stratigraphy of Miocene to Pleistocene Sediments of East-Central Mississippi Canyon, Northern Gulf of Mexico
Naia Suszek	Bilham	Long-Base Tiltmeters: Design and Behavior
Justin Tweet	Chin	An Analysis of Possible Gut Contents and Invertebrate Burrows found within a specimen of *Brachylophosaurus canadenis* (Dinosauria: Hadrosauridae), from the Upper Cretaceous Judith River Formation of Montana
Kristie Yelinek	Chin	Taphonomy of Daemonelix: Implications for the preservation of terrestrial vertebrate burrows and description of associated invertebrate burrows

Ph.D. Candidates Graduating with Degrees

Gita Dunhill	Syvitski	Iceland and Greenland Margins: a comparison of depositional processes under different glaciologic and oceanographis settings
Inocente Espinoza-Maldonado	Atkinson	Cerro de Oro Mining District, Sonora, Mexico: Geology, Igneous Petrology and Mineral Deposits
Chris Holl	Smyth	Effects of hydration on the structure and compression of wadsleyite
Gréta Bjőrk Kristjánsdóttir	Andrews	Holocene changes in climate, environment, and ocean reservoir age on the iceland shelf: Mg/Ca, d180, and tephrochronology of core MD99-2269
Shirley Kurc	Small	Dynamics and Controls of Ecosystem Scale Water, Carbon, and Energy Cycling at Semiarid Grassland and Shrubland
Dominic Papineau	Mojzsis	The rise of atmospheric oxygen and the evolution of the sulfur and nitrogen cycles on the Archean and Paleoproterozoic Earth
Jocelyn C. Turnbull	Lehman	Development of a high precision 14CO2 measurement capability and application to carbon cycle dynamics

2005-2006 Undergraduate Mentoring Program

MENTOREE	MENTOR	PROPOSAL TITLE
Daynna Rodosovich	David Budd	Lateral Geochemical heterogeneity in Mississippian dolomites
Forest Reider	Karl Mueller	Neotectonics of the American Mid-continent
Jake Gelfand	Suzanne Larson	Georeferencing of the map library aerial photos
Mark Gorman	Daniel Woody	Field study of the Paleocene-Eocene Thermal Maximum in Wyoming
Ben Haugen	Paul Weimer	Editing of digital imagery for the animation of modern depositional settings
Chris Dodson	Craig Jones	Assist with deployment and servicing of seismometers in the Sierras
Gus Leger	Eric Small	Soil texture and root distribution in ponderosa pine and mixed conifer forests
Jacob Bauer	Shemin Ge	Study the interaction between graoundwater and surface water in the Walden/Sawhill Ponds area in Boulder
Chris Dodson	Ursula Quillman	To detect the 8.2 ka cooling event in the marine sediment record in NW Iceland
Kate Mickelson	Henrietta Laustsen	Geoforensics with NecroSearch International

Undergraduate Awards for Spring 2006

AWARD	RECIPIENTS
AWG Outstanding Seniors	Amanda Nahm Angela Cook
Bruce Curtis Outstanding Junior	Daniel Lopez
Johnston Memorial Scholarship	Greg Diefenbach
RMAG pick	Cheryl Mnich
Spetzler Award	Greg Diefenbach Isaac Vimont
T. Keith Marks Scholarship	Gus Leger

Graduate Awards for Spring 2006

AWARD	RECIPIENTS
Association of Women Geoscientists (AWG)	Ursula Quillman Jocelyn Turnbull
Bruce Curtis Fellowship	Nick Sommer
Bruce Curtis Scholarship	Ken Babcock
Jack Edwards Scholarship	Rachelle Richmond
Jeffrey Deen Memorial Scholarship	Corey Lawrence
Longley, Wahlstrom, Warner	Brian Yanites
RMAG Bolyard Award	Daniel Woody
W. O. Thompson Award	Ian Sweeney
Waldrop Memorial Scholarship	Nicole Cates

Congratulations to all of our Department of Geological Sciences Graduates and Award Winners!

Notes From The Advisory Board

By Neil Fishman

It seems as though every time you pick up the newspaper CU is in the headlines. Regrettably, most of the recent news articles tend to highlight problems at CU. But there are some noteworthy accomplishments to report from the university and many come from the Department of Geological Sciences. At our Spring meeting in April, 2006, the Advisory Board learned of some outstanding achievements made by the department in several areas—academics, citation impact of faculty publications, participation in the Weiman Science Education Initative and creating a more diverse department. Did you know that the department is now nationally-ranked? US News and World Report recently ranked the department 18th in the nation for its Ph.D. program. To my knowledge, this is the first time that they have achieved a national ranking among Earth Sciences departments. And if that weren't enough, the department ranks 3rd among all public universities and 8th among all private and public universities for their faculty's relative citation impact, as determined by ScienceWatch. Both rankings are excellent measures of the department's significant and rising national stature and are accomplishments for which we can all be proud.

The Advisory Board was also pleased to hear from Department Chair, Dr. Mary Kraus, about the department's acceptance into the Wieman Science Education Initiative. This initiative, created by Distinguished Professor and Nobel laureate Carl Wieman (CU, JILA), is designed to change how science is taught in the classrooms of CU Boulder science departments, including the Department of Geological Sciences. Importantly, the department's faculty is firmly committed to improving student learning; they will be implementing the initiative across the entire undergraduate curriculum, from large introductory lectures courses to small classes for majors. Its voluntary participation in the initiative boldly demonstrates the department's commitment to exemplary teaching. Thanks are extended to Dr. David Budd, who led the department's successful efforts to participate in this important initiative.

The department is also continuing its efforts to create and support a diverse faculty and student population. The faculty is now 25% female and 11% minority and the diversity of the student population is increasing. This puts the department ahead of most others on the Boulder campus in the area of diversity.

I can also report on the department's successes in the area of fundraising. With impressive leadership from Advisory Board members Matt Silverman, Dave Peterson, and Terry Mather, the Bruce Curtis Endowment reached its fundraising target of $500,000 and two graduate students have already received financial support from the endowment. Efforts by the department and other advisory board members have also been successful in raising the fund balance in the Bill Braddock Geology in the Field Endowment to over $200,000! Thanks to all who have made donations and to those who helped raise much-needed money to keep students in the field.

Finally, I'd like to extend a heartfelt thanks to Jeffrey Abbott, Carol Finn and Brent Johnson who have left the advisory board. The department gained much through their efforts and I am grateful to have had the opportunity to work with each of them. And I'd like to extend a warm welcome to new board members Ben Lowry and Colette Hirstius. Both Ben and Colette, who recently graduated from the department, attended the Spring 2006 meeting and contributed significantly.

Obituaries

William Louis Hiss, a retired professional geologist/hydrologist with the U.S. Geological Survey and successful second-career stockbroker, died Wednesday April 12, in Villa de Antofagasta de la Sierra, Catamarca, Argentina. He was 75. At the time of his death William was participating in a field trip to study the geology of the Andes. He died of natural causes.

Bill was born in Great Bend, Kansas in 1931. His parents, Rosa and William Hiss, were farmers during the Great Depression, and the rough times experienced by Bill and his family and others made a lasting impression on him that influenced him deeply. He had great respect for those that struggled against adversity and gave generously to those that he felt deserved some extra help. He left the family farm determined to make a go of it and talked his way into his first job, building a bridge as part of a construction crew. A quick study, he learned basic carpentry skills on the fly and convinced others he knew what he was doing. Through grit and determination he was able to get into college.

Bill graduated from Kansas State University in 1953 with a degree in Geology. He received a M.S. in Geology from the University of Oklahoma in 1960, where he studied ferromagnesian minerals in the basic igneous intrusive rocks in the Wichita Mountains of Oklahoma. He completed his doctoral dissertation in Geology at the University of Colorado in 1975. William studied the movement of ground water in Permian Guadalupian aquifer systems in southeastern New Mexico and western Texas. Results of his research formed the basis of a lawsuit between the two states over water rights.

Upon finishing his dissertation, he accepted a full-time job with the U.S. Geological Survey in Albuquerque, New Mexico and then in Menlo Park, California, where he was a hydrologist/geologist for almost 20 years. In collaboration with others, he developed a large number of computer applications used to store and analyze data on groundwater resources in New Mexico and West Texas, primarily for modeling the Capitan Reef and a variety of hydro-geologic applications and complex groundwater systems. After leaving the Survey, he embarked on a new career as a stockbroker.

He was very interested in the world around him and had diverse interests. He was a member of the Northern California Geological Society, the Geological Society of America, the Mineralogical Society of America, and the Berkeley Camera Club, where he recently won several awards for photographs of his travels to exotic places. He loved ballroom dance and he collected minerals and crystals and books from around the world.

Bill was a generous friend to the department. He provided matching funds for the Braddock In-the-Field Endowment, and those funds were instrumental in initiating that endowment. He was the founder of the William L. Hiss Awards for Creativity in the Earth Sciences. Those awards provide travel money to allow students to attend and present papers at national and international professional meetings. He was also a generous donor to the Bruce Curtis Endowment.

The department has learned that **Ernest W. Wahlstrom**, who retired from the Department in 1978, died in Bellevue Washington on July 10, 2000. Professor Wahlstrom was 90 at the time of his death.

Many of you probably remember Ernie and the department invites you to share your memories. Please send us your recollections of Ernie and they will be published in the 2007 Newsletter. You can email your memories to mary.kraus@colorado.edu or mail them to Mary Kraus at the department.

Alumni News

Vic Baker My work on the catastrophic Pleistocene Missoula floods (the subject of my 1971 CU PhD dissertation and subsequent research) will be featured in the upcoming PBS NOVA production "Mystery of the Megaflood" to be aired the week of September 20 on most PBS stations. I recently finished 8 years as Department Head of Hydrology and Water Resources at The University of Arizona, and I am now back to doing full-time research and teaching in planetary science (Mars geomorphology), paleohydrology, and glacial geology.

Cary Black Hi, I'm Cary Black, Class of 1985. I currently work as an R&D and Quality Control Manager for Duro-Last Engineering Services. I formed Red Owl Publications in 2004 and am currently marketing my latest book, "Zen and the Art of Cooking Beer-Can Chicken: The Definitive Guide." Check it out at www.redowlpublications.com. Watch for my new book in mid summer of 2006 entitled "Katrina: A Freight Train Screamin." I live with my wife Carol and three awesome children in Michigan. I would love to hear from any of my old geology buds from '85...Especially my dear friend Dr. Chris Wold..."where'd ya go buzzard?"...Wishing you all peace...I am proud to be an alumni of the CU Geology Department...Cheers and onwards and upwards! Cary

Steve Colman Steve has taken early retirement from the U.S. Geological Survey in Woods Hole, MA, to become Director of the Large Lakes Observatory at the University of Minnesota Duluth. He is also a Professor in the Department of Geological Sciences at UMD, and Marian is an Instructor in the School of Fine Arts.

Stephanie Gaswirth Alan and I relocated back to Denver from Houston in the Fall of 2005, after I spent a year and a half working for ExxonMobil Upstream Research Company. I will be starting work in September with the USGS as a Research Geologist with the Central Energy Team. Alan and I welcomed our first child, Benjamin Noah Fliegelman, on April 25, 2006. He was born at Rose Hospital in Denver, weighing 7 lbs, 3 ozs. and 20.5 inches long.

Bruce Geller, PhD 1993 Over the past two years I have conducted mineralogic research in Denver on mineral deposits in Australia, Brazil, Cambodia, Canada, China, Ethiopia, Ghana, Indonesia, Mali, Mexico, Nevada, Peru, Romania, Russia, Turkey, and the U.S.. Much of this work was reflected and transmitted light petrography for Newmont Gold, at the time the world's largest gold company. I have also attended the last ten Prospectors' and Developers' conventions in Toronto and published articles about several of them in the journal Mining Engineering.

Doug Geller I've been Groundwater Program Manager for the City of Portland, Oregon for the past 6 1/2 years. Still getting out and doing a bit of climbing and skiing but not enough...so, we're moving to British Columbia at the end of the summer. My wife Mary Ann, and sons Ethan (7) and Gabe (4) will reside in Vernon in the North Okanagan region. I'll return to consulting, heading up the groundwater practice for Summit Environmental Ltd., continuing work in water supply development and management, including conjunctive management of water resources such as ASR.

Vance Holliday, PhD 1982, I joined the faculty of the University of Arizona in 2002 after 17 years at the University of Wisconsin. At Arizona I hold a joint appointment in Anthropology and Geosciences. I am also Executive Director of the Argonaut Archaeological Research Fund, a privately endowed research program focused on the earliest human ("Paleoindian") settlement of the southwestern U.S. and northern Mexico. The research has included geoarchaeological investigations at early sites in Arizona, New Mexico and Sonora, Mexico. In addition, I have also been involved in an international project investigating upper Paleolithic sites on the Don River, Russia.

Erle G. Kauffman, upon graduation from the University of Michigan, was employed immediately, and spent 20 years at the Department of Paleobiology in the Smithsonian Institution's U.S. National Museum of Natural History. While at the USNM Erle taught, mainly in the evenings, for 19 years at George Washington University (Geology, Paleobiology and Stratigraphy). He then spent the next 15 years as Chairman and Professor at the Department of Geological Sciences, University of Colorado, Boulder, and 10 years at Indiana University Department of Geological Sciences. Erle finally retired at age 70. Retirement was marked by a 4-day long continuous party, beginning with a 100-person sit-down dinner at the Union, and retreating to his house for three more days, complete with catered brunches. He says "It was a wonderful way to go out." Erle won the Scientist of the Year award from the Rocky Mountain Association of Geologists (1977), The R.C. Moore Medal for Excellence in Paleontology (1991), the Gilbert Harris Medal for Excellence in Systematic Paleontology (1997), and the William H. Twenhofel Medal for Excellence in Sedimentary Geology (1998). In 1982, he won "The Best Paper Award" with Jim Steidttman for a paper entitled "Are These the Oldest Metazoan Trace Fossils?" And to cap it off, he was awarded another doctorate from the University of Gottingen, the oldest University in Germany. Erle proclaims "I've had a rich and full life." He will continue his productive life by coming in most days to do untethered research, which he loves, but taking time out for hiking, camping, going to concerts and plays, fishing and just tinkering about the beautiful, largely deer-proof gardens spread across 4.5 acres.

John W. Rold was awarded Honorary Membership in AAPG in 2006. John received his BA (1948) and MS (1950) degrees from Geological Sciences. John worked for Chevron for 20 years and was appointed Director of the Colorado Geological Survey and State Geologist in 1969. In addition to service to AAPG, John was president of the American Institute of Professional Geologists in 1981 and has been active in the Geological Society of America, American Geological Institute and Colorado Scientific Society.

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