Geology News

Department of Geological Sciences | University of Colorado at Boulder | 2008-2009

Spring Graduation 2009

Contents

Letter from the Chair

Mary Kraus

I have just completed my sixth and final year as Department Chair. The new chair is Lang Farmer who begins his duties in July. During my time as chair I have been helped considerably by Lang Farmer and Shemin Ge, who each served a term as Associate Chair for the undergraduate program, and by Karl Mueller and Bob Anderson, each of whom served a term as Associate Chair for the graduate program. On behalf of the department, I want to thank them for their dedication and service.

Last year I reported that our student numbers increased such that there were about 115 undergraduate students in spring 2008. Lon Abbott, our undergraduate advisor, has told me that the number has increased again over the past academic year such that the Department now has slightly over 150 undergraduate majors! In addition to educating our majors, the department continues to play a large role in the science education of undergraduate students at CU with approximately 4,000 undergraduate students enrolled in geology classes last year. As you know from newsletters over the past several years, the Department is involved in the Science Education Initiative (SEI) at CU. The goal of that program is to change the way science is taught to both the non-major undergraduate students and our undergraduate majors.

Graduate student numbers also increased last fall because an unusually large new group of students – 29 – entered our program. Thus, our total graduate population was 85 students this past year. Many of those new students were teaching assistants this year, and the SEI conducted a 2-day training session for them to help each TA be more effective in the classroom. Twenty-three new graduate students will start in Fall 2009. They will participate in the 6th Annual Bill Bradley Field Trip, which will be held on August 22 and 23. We welcome any alumni who would like to participate – just send Lang Farmer an email to let him know that you would like to attend.

The 5th Annual Bill Bradley Field Trip was held last August and was again supported by Shell Exploration & Production. Field trip participants spent the night at the Mountain Research Station, where we were joined by other faculty and students. We thank the Advisory Board, whose members generously provided funding for the liquid refreshments for the evening.

The Advisory Board met twice this year as usual. The board has one new member – Erik Oerter who is with the Colorado Geological Survey. I thank Gina Tempel and Patrick Williamson, who have rotated off the board, for their efforts on behalf of the department. Neil Fishman, who continued as chair of the Board over the past year, will remain on the Board; however Dean Miller will be the new chair of the board starting this Fall. I have greatly enjoyed working with Neil and thank him for the strong leadership and vision that he has provided to the Advisory Board during his chairmanship.

The last page of this newsletter usually lists the names of those who have donated to our program over the past calendar year. At the request of the CU Foundation, we are not publishing that list this year. The Foundation has concerns about privacy and the chance for errors in such lists. To all the individuals and corporations that have given over the past year, 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.

We want to thank our Advisory board members for donating their time and energy to the department

Notes from the Advisory Board

By Neil Fishman

I have thoroughly enjoyed the time I have spent as Chair on the Department of Geological Sciences Advisory Board. Now, as I prepare to step down from this position, I reflect back on the past few years and ask, what were the most enjoyable parts of serving the department in this way? At the top of my list—my interactions with Chairperson Mary Kraus. It has been a real pleasure working with her, and I would extend a hearty thanks to Mary for so masterfully, professionally, and successfully leading the department through a period of significant growth in terms of the number of faculty and students. As a champion of the department's involvement in the campus-wide Science Education Initiative, Mary has also helped to establish the department as a leader in developing new and better ways to teach earth science. A well-educated group of "soon-to-be" earth scientists is exactly what we need to help meet the mounting challenges that we face. Mary's guidance has also firmly established the department as a place of excellence on the Boulder campus, and we can all, as alums and supports, be thankful to her for all she has done as Chair. She leaves a strong and remarkable department to incoming Chair, Lang Farmer, and I wish Lang all the best as he takes over soon. I also welcome Dean Miller as the incoming Chair of the Advisory Board.

It was also my great pleasure to work with members, current and past, of the Advisory Board. We work hard to achieve the Board's mission to strengthen bonds among the department, alumni, friends and industry, as well as to assist in improving the quality of education for students in the department. Members provide the department with excellent feedback and advice on a variety of matters ranging from the undergraduate curriculum to outlining the best approach to take in fundraising to enhance programs. It has been quite rewarding for me to know and to work with so many fine alums from the department. I would like to extend a most sincere thanks to outgoing board members Gina Temple and Patrick Williamson, who rotated off the board at the end of our Spring, 2009 meeting. They brought much enthusiasm to the board and their contributions are too many to list here. Suffice it to say that the department is a better place due to Gina and Patrick's involvement. As Gina and Patrick end their terms on the board, I am excited and pleased to welcome Erik Oerter as the newest Advisory Board member. Erik is a recent grad and works for the Colorado Geological Survey, and, based on his involvement at our Spring meeting, I can see we made an excellent choice in asking Erik to join the board.

Finally, the financial crisis has taken its toll on the endowments that fund student field trips, graduate fellowships, and other activities within the department. Although all of the endowment accounts are smaller now than they have been in the last couple of years (not unlike our own personal investment accounts), the endowments are still able to funnel much needed financial assistance to the department. Your donations to these endowments are as important now as it has been in the past, and I hope you will continue to support them as they have become a key component in building the fine programs offered by the Department of Geological Sciences.

Faculty Activities

Lon Abbott joined the department in August 2007 as a new Senior Instructor and as the department's Undergraduate Advisor. Lon grew up here in Boulder and was drawn to study geology in college because of his love for the Colorado mountains. He attended the University of Utah for his Bachelor's work, where he did a double major in geology and geophysics. Upon completion of his degree he worked for two years as a field geophysicist for a Salt Lake City-based aeromagnetics firm and then headed to graduate school at University of California, Santa Cruz. Lon's passion for mountains, which attracted him to geology in the first place, has remained his primary focus. His dissertation at Santa Cruz, under the guidance of Eli Silver and Bob Anderson, characterized the structural and sedimentary evolution of an active arc-continent collision zone in Papua New Guinea that is currently raising the world's youngest mountain range. While in graduate school, he was strongly influenced by the work of Peter Molnar on distinguishing between different types of mountain 'uplift'. Lon realized that his thesis area possessed unusual attributes that allowed one to quantify the rate of tectonically-driven surface uplift, a quantity that had not been measured for any of the world's mountain ranges, so he pursued this project as a post-doctoral researcher at Santa Cruz. From there he took a faculty position at Prescott College, a small Arizona liberal arts college, where he remained for ten years. During his time in Arizona, Lon became fascinated by the puzzling uplift history of the Colorado Plateau and the Southern Rocky Mountains. His current research attempts to tease out that uplift history through the constraint of other significant variables. These variables range from the rate of Quaternary Colorado River incision during carving of the Grand Canyon to the pattern of crustal compositional and thickness variations across the Colorado Plateau/Basin and Range transition zone. While at Prescott, Lon's main job was to teach and advise undergraduate students, a job he loved. A stint as the Associate Dean for Academic Affairs heightened his appreciation for the complex challenges faced by today's undergraduate students. He loves conducting research but his primary passion is to work with students. He moved from Prescott College to Red Rocks Community College and then to CU. He is thrilled to be home and to have a job where he works so closely with the enthusiastic, motivated students in this department.

Craig Jones reports that two of his students came to a workshop on the Sierra held in Tucson in November 2008 and both gave presentations. Heidi Reeg, who after defending her MS took a leave to earn a teaching certificate while teaching middle school science in the St. Vrain school district, came back to discuss the P-wave tomography she has developed for the entire Sierra from our deployment of 50 seismometers over 2 years in the Sierra. The other student, first year grad student Will Levandowski, discussed his analyses of gravity and flexure associated with the loads predicted by the tomography in an attempt to determine where, if anywhere, there is significant garnet present in the lower crust or uppermost mantle. His early results suggest that a high-velocity body imaged under the southeastern San Joaquin Valley contains significant amounts of garnet that are compatible with ideas of removal of a garnet-rich residuum under the Sierra by convective processes in the past few million years. All of this work is within the Sierra Nevada Earthscope Project and the associated Sierra Nevada Drips Continental Dynamics Project, which together include 14 principal investigators, including 4 at CU (Jones, Farmer, Anderson, Molnar).

Matt Pranter has been on sabbatical leave during the 2008-09 academic year and has been working on research in the Piceance and Powder River basins. His research in the Piceance Basin involves analysis of fluvial and marine deposits of the Cretaceous Mesaverde Group. His work in the Powder River Basin involved analysis and reservoir modeling of Cretaceous marine sandstones (Sussex interval) and reserves evaluation. Matt collaborated on the Sussex project with Dr. Gus Gustason and David Wheeler at El Paso E&P in Denver (both are CU alums).

In fall 2009, Matt officially returns from sabbatical and will teach Introduction to Geology and his graduate-level Petroleum Reservoir Characterization and

McClure Pass, Colorado (south of Glenwood Springs). Graduate students Rachel Shaak and Sait Baytok, and Prof. Matt Pranter visited the area to evaluate outcrops of the Williams Fork Formation in the area.

Modeling course. In spring 2010, Matt is excited about teaching the new undergraduate (Junior-level) course that he developed called ***Introduction to Hydrocarbon Geology***. Matt will primarily focus on the geology of conventional and unconventional petroleum resources and will also address coal resources. A course on this topic has not been taught at the undergraduate level for many years, and Matt is looking forward to the opportunity.

Matt continues to be active in AAPG and SEPM, serves as an Associate Editor for the AAPG Bulletin, co-chaired sessions on reservoir characterization and modeling at the 2008 Annual AAPG/SEPM Convention, and will co-chair sessions on Tight-Gas Sandstones and Carbonates at the 2009 AAPG/SEPM Convention in Denver. Matt is also co-leader of a SEPM Piceance Basin Field Trip and co-author on several posters for the conference in Denver. Rex Cole and Matt Pranter were the recipients of the 2008 A. I. Levorsen Memorial Award for Best Paper at the Rocky Mountain Section, AAPG Convention in Denver for their paper: *"Stratigraphic variability of sandstone-body dimensions in the Williams Fork Formation: Outcrop data from the southwest Piceance Basin, Colorado"*. A journal article on this topic has been accepted for publication in the AAPG Bulletin.

Alexis Templeton and her students have pursued several new field-based geomicrobiology projects in the past year. In general, her research group tries to identify geochemical reactions that release sufficient energy to support the growth of microbial organisms; the next step is to then determine how these bacteria influence the evolution of fluids and secondary mineral growth during water-rock interaction. For example,

Researchers from the Templeton lab on Yellowstone field trip, Fall 2008. Left to right: Rachael Hoover, Katherine Wright, Betsy Swanner, Alexis Templeton and Lisa Mayhew.

graduate student Lisa Mayhew spent 5 weeks along the Mid-Atlantic Ridge in summer 2008 to collect samples from the Rainbow and Lost-City hydrothermal fields to test the hypothesis that microorganisms might thrive in the deep sea floor where hydrogen is being generated by serpentinization reactions. Lisa's work has now moved to the lab where she is working closely with GEOL undergraduate student Rachael Hoover. A few months later, graduate student Emily Knowles (who received a NASA graduate fellowship this year to support her work) and GEOL undergraduate student Daniel Eldridge, went to sea at Loihi Seamount. Loihi is an active submarine volcano adjacent to the Big Island of Hawaii, and this site provides an excellent location to test whether or not microbial organisms thrive within basaltic rocks undergoing weathering reactions on the sea floor. And currently, graduate student Katherine Wright is preparing for a summer 2009 expedition to Ellesmere Island in the High Arctic to identify the geomicrobiological processes involved in precipitating large-scale deposits of elemental sulfur on glacial ice. This site is currently being assessed as a potential terrestrial analog for the coupled geochemical-microbiological systems that may be relevant to life on Mars and Europa. Graduate student Damhnait Gleeson, who was the first in the group to work at this High Arctic site (to conduct remote-sensing work on the site mineralogy), has successfully identified some of the key microorganisms responsible for producing sulfur biominerals, and she will defend her PhD thesis this summer. And finally, closer to home here in Colorado, graduate student Betsy Swanner is currently trying to demonstrate that water-rock interactions at the contact between molybdenum ore-bodies and the Precambrian Silver Plume granite sustain novel, deep-subsurface microbial communities that significantly modulate the aqueous and mineral chemistry of their environment. Once or twice, group members did travel together this year, mostly to either use analytical facilities at National Laboratories, such as the Stanford Synchrotron Radiation laboratory in California, or to participate in the Planetary field geology trip to Yellowstone National Park.

Last August, **Paul Weimer** was a co-leader of a one-day field trip for the two Denver RMAG study groups to the Ridgway, Ouray, and Yankee Boy Basin areas, in the San Juan Mountains. Paul dusted off his MS thesis maps and cross sections of Ridgway, boldly displaying them again (for ridicule).

In the fall, Paul taught Sequence Stratigraphy and Basin Analysis (6330) for the fifteenth time. During the spring semester, he taught Geology of Colorado (1040), and supervised the International Barrel Competition (see EMARC news).

Paul continues to serve as Trustee for the Gulf Coast Section SEPM Foundation. He served on the program committee for their 2008 Research Conference on deepwater reservoirs; he serves on the 2010 conference on 3D seismic stratigraphic interpretation of depositional systems, and 2011 conference on seismic attributes.

Paul finished co-editing the book Mass-Transport Deposits in Deepwater Settings (SEPM Special Publication Number 95) with Craig Shipp and Henry Posamentier. He is writing and editing a very special AAPG publication for early 2010.

For the AAPG, Paul serves on the AAPG Education, Publications, Distinguished Lecture, and 100th Anniversary Committees. He served as the Technical Program Vice-Chair the 2009 AAPG National Convention in Denver, organized two technical symposia, and gave a two-day short course at the convention.

As part of his responsibilities with the 100th Anniversary committee, he is videoing and conducting interviews (with Ed Dolly) with select "Geo-Legends" in the Rocky Mountain region and Houston. Ultimately, they conducted two-hour interviews with 23 people. Editing of the interviews begins this summer. Results will eventually be made available through the RMAG and AAPG.

With Jay Austin and Leo Ascarunz, he continues to work towards finishing a major outreach project on Colorado geology. In July, they presented to the Council of Graduate Schools in Vail. In September, they presented for the Florence and Canon City Secondary Schools.

He currently supervises ten graduate students, employs two post-docs, and sponsors two visiting scientists. Paul is running for AAPG President in 2009-2010. See EMARC News for his research program.

Other Faculty Activities

Gifford Miller elected AGU fellow for 2009

In May 2009 Giff Miller was made a Fellow of the American Geophysical Union "for his pioneering work in dating methods as well as his insights into the Quaternary climates and the role of humans in ecological change." Miller was one of only 38 AGU Fellows elected from the United States in 2009 for their outstanding science and community contributions. An additional 16 AGU fellows were elected from outside the United States. The AGU Fellow awards — which annually recognize members who have made outstanding science and community contributions — are conferred on no more than 0.1 percent of AGU members in any given year.

Giff's research involves studying the geological record to evaluate the range of natural climate variability as a way to understand how Earth responds to climate changes as the result of ice ages. A 2008 study led by Miller showed that ice caps on the northern plateau of Baffin Island in the Canadian Arctic have shrunk by more than 50 percent in the last half century as a result of warming temperatures, and are expected to disappear by the middle of the century. The last time the region was warm enough to melt ice caps was more than 1,500 years ago, when there was more solar energy in the summers than today but fewer greenhouse gases.

Miller also studies prehistoric monsoon cycles in Australia, as well as the impact of human colonization of the continent on climate, regional vegetation, and the extinction of megafuana. Giant Australian animals that went extinct in the past 50,000 years include Volkswagen-sized tortoises, hippo-sized wombats, 1,300-pound lizards and 300-pound birds known as Genyornis newtoni. By analyzing fossil eggshells of birds inhabiting Australia across tens of thousands of years and determining the composition of their diets through their carbon isotopes, Miller showed early human immigrants likely altered the continent's interior with fire. Such burning may have triggered the failure of the annual Australian monsoon some 12,000 years ago, shifting the landscape from a mosaic of trees, shrubs and grasses to the desert scrub evident today.

Prof. Gifford Miller @ Inner Clyde.

Teacher At Sea

by Anne Sheehan

In February 2009, CU Geological Sciences grad student David Culp and professors Anne Sheehan and Peter Molnar joined a team from MIT, Woods Hole Oceanographic Institution, and the Scripps Institution of Oceanography, to deploy thirty ocean bottom seismometers offshore both the east and west coasts of the South Island of New Zealand. The goal of the project is to map out large scale seismic structure, particularly anisotropy, of the crust and upper mantle on both sides of New Zealand's Alpine Fault. This study of the Alpine Fault will provide information for better understanding other plate boundary transform faults, such as the San Andreas Fault of California. Two end member models will be tested through this experiment. One model suggests that major faults, like the San Andreas in California, pass directly through the crust and through the mantle lithosphere as narrow shear zones, so that the adjacent lithosphere hardly deforms. In the other, the faults spread into wide shear zones in the lower crust, and the mantle lithosphere deforms over a broad zone hundreds of kilometers wide. As polycrystalline olivine deforms, individual crystals align so that the aggregate of crystals becomes anisotropic. Thus anisotropy can be used to map out patterns of deformation in the mantle, and test the models for plate boundary deformation.

Ocean Bottom Seismometer package being deployed offshore New Zealand, February 2009. Geological Sciences graduate student David Culp and professors Peter Molnar and Anne Sheehan and participated in the month long research cruise and deployment.

Teacher at sea and CU Geology alum Dan Tomlin (BA '86), crew member Pam Blusk , and CU Geological Sciences Prof. Anne Sheehan aboard the R/V Thomas G. Thompson, New Zealand ocean bottom seismology experiment, February, 2009.

The team was accompanied by science teacher Dan Tomlin from Manhattan Middle School in Boulder. Dan is also a CU Geological Sciences alum (BA '86). Dan's job was to blog about his experience at sea for his class back in Boulder. In addition to descriptions of New Zealand geology and earthquakes, Dan's blog included interviews with the crew and scientists, stories about life at sea, descriptions of wildlife observed, discoveries from mapping the sea floor, astronomy, and weekly questions for the classroom. Dan's science cruise blog can be found at: http://cires.colorado.edu/science/features/quakecruise/

Assessing the possibility of life on Mars in a Nicaraguan volcano

Assistant professor Brian Hynek and colleagues Tom McCollom (CU/LASP) and Karyn Rogers (U. of Missouri) are using the Cerro Negro volcano in Nicaragua to study the astrobiological potential of Mars. Two field campaigns occurred in 2008 to characterize the chemistry, geology and microbiology of the active volcano. This particular volcano is relevant to Mars because of its similar mineralogy to the Martian surface. Additionally, pervasive chemical weathering is occurring and altering the basalt into sulfates and Fe-oxides/hydroxides, the likes of which have been recently detailed all over Mars. Studying a contemporary environment on Earth that replicates processes that happened billions of years ago on Mars is yielding some surprising results. Hynek's team has found microbes living in highly acidic steam jetting out of the active fumaroles (pH = 0, T = 96°C). Thus, it's possible that similar environments on Mars could have supported primitive life. This work is funded by NASA's Exobiology Program.

Prof. Hynek sampling gases in the crater of an active volcano

Thank You Mary Kraus!

On Wednesday, April 22, 2009 the department of Geological Sciences expressed their appreciation and Thank You to Mary Kraus for her outstanding tenure as Department Chair. Mary was presented with several gifts including a picture from the junior faculty, a wardrobe award and a signature engraved box with goodies from all of the faculty members. Thank you Mary!

Lang Farmer just told Mary he is ready for the challenges of being the new Chair. Previous Chairs John Andrews and Charles Stern remain silent.....

The picture that was presented to Mary Kraus from the Junior faculty

EMARC News http://emarc.colorado.edu

Paul Weimer: The past year has been memorable for several reasons.

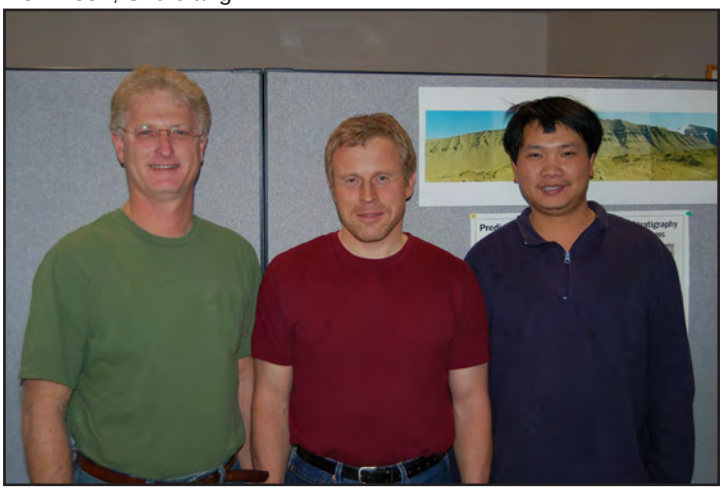
During February, EMARC and the department benefitted from the incredible donation by CU alums **Fred Tietz** and **Scott Tinker** for the subscription to DataPages, the online access to all of AAPG publications. License is for perpetuity, and the student and researchers will benefit enormously. **Our sincerest thanks to them for their gift.**

In 2008-2009, Scott Tinker (PhD 1996) became the second CU alum to serve as AAPG President. Kudos to Scott. Don Tobin (1940) was the first AAPG President with CU credentials.

Drs. Miki Gardosh (Geophysical Institute of Israel-Tel Aviv) and Sverre Henriksen (StatoilHydro-Trondheim) spent the year with us on one-year sabbaticals, which was highly beneficial for everyone involved. Both gave several talks in the department and the local Denver geo-community. Both gave talks at this year's AAPG Convention, and co-chaired a session on emerging global deepwater provinces. While here, Miki studied the geology of deepwater eastern Mediterranean, an area of complex geology including the recent sub-salt Tamil field discovery (5 Tcf). The origin of the highly unusual lower Pliocene reservoir sand mounds has become the MS thesis project for Andrew Fuhrmann. Sverre Henriksen edited a special issue of Basin Research, and together with Dr. Shu Jiang (research scientist), worked on the deepwater Angola deepwater deposits.

EMARC researchers continue to help beta-test seismic attribute software developed by Research Professor Geoff Dorn and his PhD students (Stan Hammon, Ben Kaldlec, Jim Carlson). This software helps to define and characterize stratigraphic and structural boundaries and internal stratigraphy.

EMARC visiting scientists: Left to Right; Miki Gardosh, Sverre Henriksen, Shu Jiang



Left to Right; Graduate Students Sait Baytok, Rachel Shaak, Andrew Fuhrmann, Alicia Hewlett, Joe Nicolette

Ongoing research programs include shallow analog studies of deepwater depositional systems from northern Gulf of Mexico. Shu Jiang continues to interpret these data. Jay Austin continues to works as a ½ systems administrator for a new Linux-based network, amongst his other myriad responsibilities.

In late March, Ben Herber gave a talk at the RMAG/DGS 3D seismic symposium on the Red Wing Creek Field, a well known meteorite impact field in the Williston Basin in western North Dakota. He wowed the crowd with movies of the 3D data set, which was provided to us by CU-alum Roger Barton (BS, 1969) of True Oil. Ben's talk was of particular significance, because it was highlighted in the April AAPG Explorer. He gave a poster of it at the June AAPG convention. In August, Dr. Cao Renyi will join us for a year to develop a comprehensive 3-D reservoir model. This feature is still….complex geology.

During the spring semester, ten students participated in the AAPG Imperial Barrel Competition. This is an international competition in which 89 universities participated globally. Participating universities are given

an exploration data sets, comprising seismic data (2D and/3D), wireline logs, biostratigraphic data, test information, etc.); the teams are allowed eight weeks to analyze the data and make recommendations. Universities then "compete" with other schools by AAPG region. Winning team then goes to the AAPG Convention where 12 teams compete in the final round. Each presentation is 25 minutes with 5-10 minutes of questions from the judges. CU had two teams this year, one with too much professional experience to participate, and one with "just the right amount." CU's team, consisting of Sait Baytok, Andrew Fuhrmann, Alicia Hewlett, Joe Nicolette, and Rachel Shaak, won the Rocky Mountain Section competition and will participate at the Convention on June 5.

A regional geologic study of the Piceance Basin is being done as part of a large RPSEA (Research Partnership to Secure Energy for America) grant with the DOE. This integrated study will ultimately address fractures in tight-gas sandstone reservoirs. The project is coordinated by Dag Nummedal, Director of the Colorado Energy Research Institute (CERI) at CSM. $2.3 Million Federal funds were allocated to this study ($560 k to Paul Weimer and Matt Pranter). An important component of the grant is the private-sponsored consortium (i. e. corporate matching to the RPSEA grant) that is being organized by Paul Weimer. Ten companies are sponsoring a regional stratigraphic, structural, and petroleum systems analyses of the Piceance Basin. Six MS students and two post-doc researchers are working on the project. Matt Pranter's portion is summarized in his yearly statement.

A new regional study of the northwestern shelf of Australia is starting his summer. In Australia, all seismic data and logs are available to the public after two years, which produces a treasure trove of information for researchers. Two MS and one post-doc will begin this summer; more students will be recruited to work on this project. Eventually, the project will be funded by the Australian industry.

Ongoing Sisyphean efforts to attract recruiters to campus continue (like last year, and the previous year…

Matt Pranter: During the past year, Matt continued his research through the ***Reservoir Characterization and Modeling Laboratory*** that addresses stratigraphic controls on reservoir architecture of fluvial and marine deposits. Matt has been actively conducting research on Upper Cretaceous formations within the Piceance Basin of northwestern Colorado since 2003 and collaborates with Dr. Rex Cole (Mesa State College) on this research. The research has involved extensive field work to obtain statistical data and develop conceptual models for deposition that are then applied in the analysis of subsurface reservoirs. Matt's research in the Piceance Basin has been sponsored by 18 companies, the American Chemical Society–Petroleum Research Fund, and more recently, through a grant from the Research Partnership to Secure Energy for America (RPSEA; Department of Energy). The RPSEA project is in collaboration with Dr. Dag Nummedal and the Colorado Energy Research Institute. In addition to RPSEA, Phase V of the Williams Fork Consortium began on May 1, 2009. In September 2008, Matt and researchers of the Williams Fork Consortium ran their Piceance Basin field trip for the sponsors, and in April 2009, they conducted their annual sponsor meeting in Boulder. Both events were well attended.

Graduate students and faculty made presentations and reviewed the research results. Current Ph.D. candidate, Adel Aboktef, M.S. students Sait Baytok, Alicia Hewlett, and Rachel Shaak, and undergraduate student Ericka Harper (Mesa State College; future M.S. student at CU) are all working with Matt on aspects of the research in the Piceance Basin and made presentations at the meeting.

Matt's former graduate students, Jill Haynie and Brandon Binford, successfully completed their Master's programs and are now working for El Paso Exploration and Production and EnCana Oil and Gas, respectively, in Denver.

Four new graduate students and a Postdoctoral Research Associate will join the *Reservoir Characterization and Modeling Laboratory* in summer and fall 2009. Matt is pleased to welcome new graduate students Ali Drushal (from College of Wooster), Ericka Harper (from Mesa State College), Kim Hlava (from Purdue), and Jeremy Ring (from University of Colorado).

EMARC

Structural Field Geology students with Prof. Karl Mueller "On The Rocks" at Arches National Park

TA Training Workshop

On August 21 and 22, 2008, the Department of Geological Sciences Science Education Initiative (GEOL-SEI) held its inaugural Teaching Assistant (TA) Training Workshop. Fourteen first-year graduate student TAs participated in the 1.5-day workshop that was designed to introduce them to teaching pedagogy, model interactive teaching practices, and foster a collaborative community of TAs. The GEOL-SEI workshop trainer, Leilani Arthurs, designed and facilitated a range of activities that promoted TAs getting to know one another, working together, and learning about and practicing pedagogical strategies that would help them fulfill their TA responsibilities and better serve the students they will teach. Based on positive TA feedback and suggestions for the future, the GEOL-SEI looks forward to sponsoring another TA Training Workshop in August 2009!

Students at the inaugural TA Training Workshop

Funding Updates

As pointed out in the News from the Advisory Board, our endowments, like those at other academic institutions, have suffered over the past year. The Foundation's investment return was down by 25%, which compares favorably to 94% of its peer institutions. Foundation and Endowment Money Management, a publication of Institutional Investor, recently named the University of Colorado Foundation as "Large Foundation of the Year" in their 2007 Nonprofit Awards for Excellence. The only university foundation nominated, the Foundation was chosen for its investment performance, innovation and outstanding asset allocation moves. The Department recognizes that this is a difficult financial time for all of us, but we encourage you to consider a gift because your gift is an essential supplement that enables us to provide a variety of special activities for our students.

At this point, the Braddock In-the-Field Fund is sufficiently large that it is meeting our various field trip needs. The major funding need right now is the Curtis Graduate Fellowship. Just a month ago, that fund received a pledge of $100,000 and the Department would like to use that pledge as a challenge to other alumni as we start a new campaign to raise funds for this Endowment. In addition to the Curtis Graduate Fellowship fund, the Department is always in need of general gifts funding. General gifts support a number of important departmental programs including student travel to conferences, the undergraduate mentor program, and activities of the undergraduate Geology Club.

Geology students on the 2008 5th Annual Bill Bradley Field Trip at Niwot Ridge

CU @ The Brown

The 4th Annual CU at the Brown Alumni Reception for the Department of Geological Sciences was held on February 19, 2008 at the Brown Palace Hotel. Anna M.R. Wells and Michael Zakroff of St Anselm Exploration Company generously sponsored this elegant reception. The reception was attended by over 100 supporters who included President Bruce Benson and his wife Marcy; Provost Phil DiStefano and his wife Yvonne; Todd Gleeson, Dean of the College of Arts and Sciences; and Stein Sture, Dean of the Graduate School and Associate Vice Chancellor for Research. It was especially gratifying to see a number of recent graduates attending this event.

The pictures in the middle section show the festivities at the Brown Palace.

Neil Fishman, chair of the Advisory Board together with Yvonne DiStefano and Doug Callier

Dean Miller, incoming chair of the Advisory Board

Dave and Mary Peterson

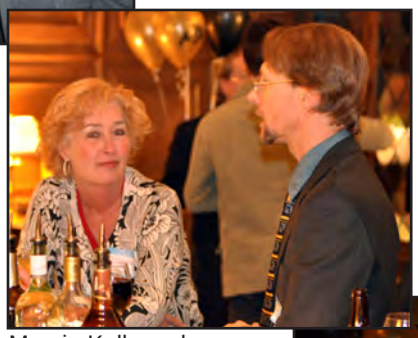
Suzanne Larsen, Head of the Earth Sciences Library and Prof. Alexis Templeton

President Bruce Benson and Chair Mary Kraus

Prof. Shemin Ge and Ralph Shroba

Dean Todd Gleeson, Provost (now Chancellor) Phil DiStefano, Chair Mary Kraus, and Neil Fishman

Marion and Dudley Bolyard together with Nancy and Keith Murray



Marcia Kelly and Prof. Greg Tucker

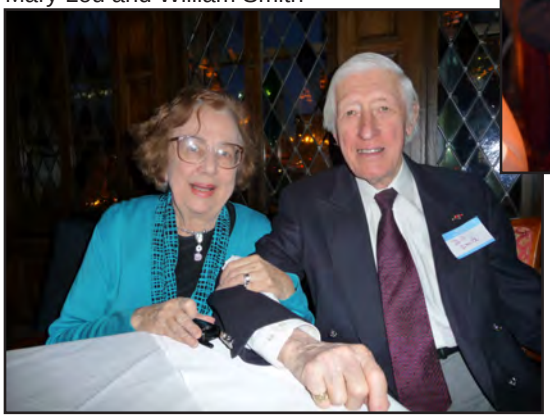
Christine Turner and Ralph Shroba

Prof. Matt Pranter

Phil DiStefano, Neil Fishman, Mary Kraus, and Bruce Benson

Lynn and David Hindman

Mary Lou and William Smith



Anna Wells Zakroff and Michael Zakroff

Geology Field Trips

Bob Anderson's Geomorphology class field trip to the deserts of Utah. Students are shown hiking up a ridge in the Blue Hills badlands north of the Fremont River, whose terraces are seen in the middle distance. It is likely that the entire relief in the badlands formed since the last glacial maximum roughly 18,000 years ago. Skyline is the Henry Mountains to the south, named by J.W. Powell upon his first trip down the Colorado River in 1869.

Giff Miller and Rich Madole explain the inticacies of the Rocky Mountain glacial history, just off Trail Ridge Road

Giff Miller took his **GEOL 5402 (Records and Clocks: Quat Stratigraphy and Geochrology)** on three field trips this fall... One day trips to see the glacial deposits of Rocky Mountain National Park (with Rich Madole) and the eolian deposits of NE Colorado (with Dan Muhs) and a 3-day trip to the Nebraska Sandhills. The Sandhills trip included an unscheduled visit by real cowboys late one evening for some genuine cowboy

Department of Geological Sciences 5th Annual Bill Bradley Graduate Field Trip

entertainment. The students cored a lake, surveyed the sand-dune-interrupted fluvial systems and recovered lake sediment from an onshore core site, where encroaching sand dunes had buried a former lake beneath more than 3 m of late Holocene sand. The students then jointly wrote up an NSF-style proposal for future research in the area based on analyses of their core and their survey results; Miller intends to submit it to NSF in the near future.

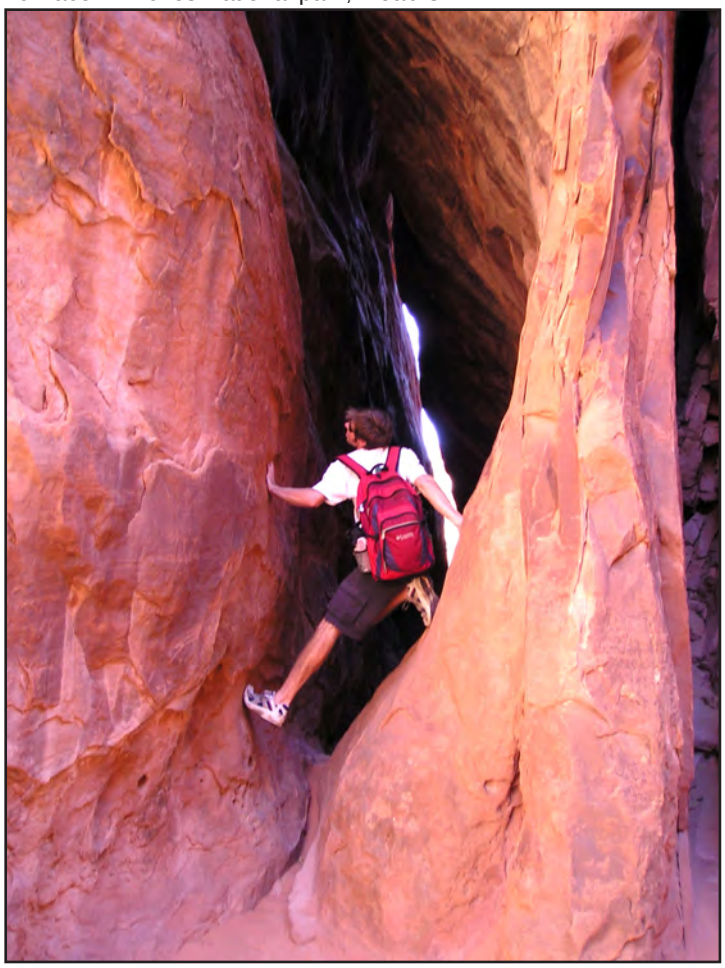
Special thanks to Gabe and Zoe Huffman for their gracious support at the Carver Ranch, and Ivan Phillips for access to Koch Ranch, northcentral Nebraska Sandhills

2008 Planetary Geology Field Trip to Yellowstone National Park

In October, 2008, professors Bruce Jakosky, Brian Hynek and Alexis Templeton led 17 graduate students on a field trip to Yellowstone National Park as part of the annual Planetary Geology Field Course. The class spent three full days touring the park and utilizing Yellowstone as an analog for learning about processes and environments on early Earth, Mars and Jupiter's moon Europa. Presentations from the graduate students covered everything from the origin of life on Earth to hot spot geophysics. This annual trip provides students interested in astrobiology or planetary geology a chance to get outside and learn about modern analogs to contemporary or ancient planetary processes.

Planetary Geology Fieldtrip to Yellowstone

A student in the Structural Field Geology course explores the Fiery Furnace in Arches National park, Moab UT



Geomorphology class takes a break on the April 2009 field trip to the Utah desert.

The Geomorphology class went on a field trip to the Utah desert in April 2009. This is as far up Little Wildhorse Canyon we got this year! The canyon is cut through Mesozoic eolian sandstones, exposing great examples of large scale cross bedding. The slot itself is carved by infrequent flash floods that drain the upper reaches of the San Rafael Swell, a Laramide structure that dominates the northern desert country of Utah.

FRONT OFFICE NEWS

The Department of Geological Sciences had another big year with major personnel changes. Carrie Simon left the position of Graduate Program Assistant in December of 2008 to become a Student Advisor in the Graduate School. This was a wonderful opportunity for Carrie and we wish her well in her new position.

In March of 2009, the Department hired **Paige Burke** to replace Carrie. Paige came to us after previously serving as the Executive Assistant to the President of Colorado Christian University (CCU.) Paige has enthusiastically plunged headfirst into learning all aspects of the new position and will work to revamp several processes associated with the tracking of our graduate students. Please join us in welcoming Paige to the Department!

Joanne Brunetti continues in her position as the Accounting Tech with humor and efficiency – both strong job requirements! Joanne works hard to ensure the tracking of finances, travel and procurement. She is very much the center of Department and faculty financial activity!

Barbara Amaral continues to enjoy her position as the front office receptionist and does a fine job of greeting students and visitors and handling phone calls with the utmost kindness and a smile on her face. She has many other responsibilities along with the academic scheduling that she works on with an upbeat attitude.

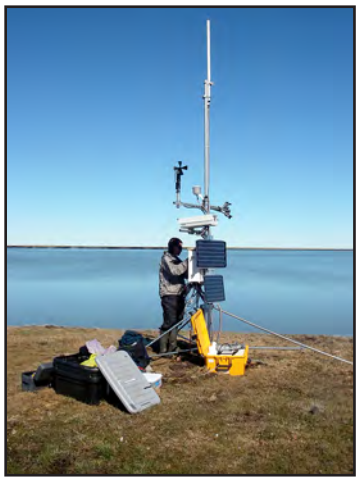
Marcia Kelly is just completing her first year in the Department as the Office Manager and Supervisor. Although it's been a long learning curve she feels fortunate and privileged to work in a department with such dedicated faculty, students and other staff. Marcia has greatly enjoyed working as the Chair's assistant with Mary Kraus and looks forward to Lang Farmer's tenure as Chair.

The staff works hard to facilitate the daily accomplishments of keeping the Department running smoothly. We look forward to assisting students, alums, faculty, and emeritus while helping to accomplish the mission of the Department in educating the next generation of leading Earth and planetary scientists.

Please stop by and see us sometime!
The Departmental office can be contacted at:
Phone: 303.492.8141
Fax: 303.492.2606
Email: geolinfo@colorado.edu

left to right; Joanne Brunetti, Barbara Amaral, Marcia Kelly, Paige Burke

Student News



Nora Matell launching a met station beside an arctic lake on North Slope of Alaska. Nora completed her Masters degree in May 2009 working with Bob Anderson, focusing on coastal erosion problems in both lake and oceanic shorelines in the arctic.

Seismic refraction field work at Green Lakes Valley west of Boulder. Graduate student Kevin Befus in background, undergraduate intern Emanuelle Bonilla in foreground with hammer. The geophysics work is part of the Boulder Creek Critical Zone Observatory, an interdisciplinary project which seeks to characterize the Boulder Creek watershed.

2008-2009 Undergraduate Mentoring Program

A number of undergraduate students received funding from the Department's mentor program to participate in research projects with faculty and graduate students. The paragraphs below provide brief descriptions of some of the students and the projects on which they worked.

Michael Beach has worked with Prof. Brian Hynek over the past two years, mapping ancient river valleys on Mars using a Geographical Information System. This work is helping place constraints on the paleoclimate of Mars and assessing its potential habitability. **Kevin Webster** worked with Prof Dena Smith on fossil insects from the Barstow Formation. Several undergraduate students are using the mentor program to gain experience in field work. **Ryan Nell**, sophomore geology major, is assisting graduate student Rachel Landman with both field and lab work related to her thesis. **Travis Kelsay** is helping graduate student, Kevin Befus, with his field work this summer.

Analisa Maier was mentored by Prof. Steve Mojzsis on a project studying the oldest known bona fide rock in the world, the Acasta Gneiss (NWT, Canada). The goal is to have a complete geochemical and geochronological "map" of the oldest known rock to learn more about its origin and subsequent metamorphic history. Steve and Analisa wish to learn what information (besides age) could still be preserved in this piece of crust from before 4 billion years ago. **Katherine Anarde** was mentored by PhD student, Alexis Ault on a project titled Deciphering the Phanerozoic burial and unroofing history of the Paleoproterozoic Queen Maud Block using apatite (U-Th)/He thermochronometry. Through this project, Katherine received training in various mineral separation techniques, in addition to training in the selection of apatites for processing via mass spectrometry.

Richard Schwering, who graduated in May, was mentored by Anne Sheehan. Rich worked on earthquake seismic data analysis applied to the determination of anistropy in the crust of the western United States. **Justin Ball**, who is a geology/physics double major, worked with Anne Sheehan on analysis of seismic waveforms from Wyoming and Southern California that show evidence of crustal anisotropy. This is of interest for fault detection, understanding earthquake dynamics, and in general for crustal deformation studies. **Casey Vockrodt** also worked with Prof. Sheehan on geophysical data visualization, particularly seismicity, topography, and moho depth maps, and **Joshua Kelly** is currently working with post-doc Vera Schulte-Pelkum on revising a seismic receiver function deconvolution computer program to make it more streamlined and able to work with a variety of data sets.

Alex McCaffree is involved in a project studying groundwater resource sustainability for the Fraser River watershed in Colorado.(see photos on p. 20) Working with graduate student Brent Aigler, Alex has conducted hydrologic permeability tests on rock samples in the lab and in wells in the field. The data will be used to characterize the rate of groundwater flow through the aquifers in the Fraser watershed. **Jonathon Galeano** has been researching the groundwater level data from the wells near the Animas River from the mountains to the intersections of the Florida River in the San Juan Basin. His research, with Prof. Shemin Ge, has potential applications to better understanding surface and groundwater interaction and impacts of production of coal bed methane on water resources in that region.

Shallow seismic refraction field work in the Betasso watershed west of Boulder, June 2009.
From left to right: Geological Sciences undergraduate mentoree Travis Kelsay, IRIS undergraduate intern Austin Andrus, graduate student David Culp, and Geological Sciences undergraduate mentoree Graham McClave

News and Awards

Undergraduate Awards for Spring 2009

AWARD	RECIPIENTS
AAPG L. Austin Weeks Grant	Cordelia Holmes
Bruce Curtis Outstanding Junior	Maureen LeVoir
Johnston Memorial Scholarship	Eamon Donovan
RMAG Outstanding Senior Award	Emily Gregonis
T. Keith Marks Scholarship	Graham McClave

Graduate Awards for Spring 2009

AWARD	RECIPIENTS
Longley, Wahlstrom, Warner	Kurt Refsnider
Spetzler Award for Research	Dustin Ward
RMAG Bolyard Award	Sophie Newbury
W. O. Thompson Award	Janice Brahney
Waldrop Memorial Scholarship	Alex Dutchak

Shell Exploration & Production Graduate Research Awards

Shell provided funding that is helping 4 graduate students complete research projects for their degrees. The students and their projects are listed below.

Saeed Saadat
Laura Wilson
Mary Ellen Benson

Shell Exploration & Production Travel Grants

Alexis Ault
Lyndsay Ball
Corey Lawrence
Benjamin Schupack
Brian Yanites
Dylan Ward
Tarka Wilcox

ExxonMobil Graduate Student Research Grants

Sean Bryan and Andrew Wickert were awarded grants of $15,000 from ExxonMobil to support their PhD research projects. Sean is a student of Prof. Tom Marchitto, and Andy works with Prof. Bob Anderson.

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

AAPG Foundation Grants-In-Aid Paul Danheim Nelson Memorial Grant

Alicia Hewlett

Other Awards

Alexis Ault, PhD student, was awarded a 2008 Spetzler Scholarship to support her thesis research on "Burial and unroofing history of the Slave craton from apatite (U-Th)/He thermochronometry". Alexis published a paper on this research in Earth and Planetary Science Letters.

Rachel Landman, MSc student, received an Amherst College Fellowship Award for her proposal entitled "Investigation of Pliocene cooling and exhumation in the Gore Range, Central Colorado, through apatite (U-Th)/He thermochronometry."

Emily Gregonis, an undergraduate student, received the 2009 Rocky Mountain Association of Geologists outstanding student award. She was awarded UROP assistantships in spring and summer 2008 to support her research using low temperature thermochronology to characterize the thermal history of a portion the western Canadian shield. She will begin the PhD program at Northwestern University in Fall 2009.

Laura Wilson received a Beverly Sears award.

Degrees Awarded

(Fall 2008 - Spring 2009)

B.A. Geology Majors

Patrick Aschwanden
Willis Blakeslee
Geoffrey Burtner
Stefan Compton
Jeff Culbertson
Peter Dalen
Ryan Dearth
Daniel Eldridge
Kaitlyn Fenton
Jonathon Galeano
Matthew Garvin
Devin Girtin
Andrew Gordon
Mark Gorman
Emily Gregonis
Laurence Healy
Cordelia Holmes
Todd Jesse
Edwin Kerr
Jeremy Ring
Soroush Saadat
Richard Schwering
Erica Siirila

Spring 2009 Department of Geological Sciences Graduates

M.S. Candidates Graduating with Degrees

	Advisor	Thesis Title
Jason Adams	Mary Kraus	Evaluation of Paleosol precipitation proxies during the PTEM
Brandon Binford	Matthew Pranter	Stratigraphic architecture and connectivity of high-sinuosity fluvial sandstone bodies in Coal Canyon, Colorado with subsurface comparison to Grand Valley Field
Jill Hayne	Matthew Pranter	Characterization and modeling of petrofacies and pore-volume distribution within a gas-storage reservoir, Ray Reef Field, Southern Michigan Basin, Michigan
Nora Matell	Robert Anderson	The sis Shoreline erosion and thermal impact of thaw lakes in a warming landscape, Arctic Coastal Plain, Alaska
Marisol Ortiz	David Budd	Diagenetic History of Upper Floridan Aquifer Limestones: A perspective using isotopic and petrographic techniques
Heidi Reeg	Craig Jones	Seismic structure of the crust and upper mantle of the Sierra Nevada, California.
Pilar Rojas-Linero	Peter Molnar	Analyses of vertical thermochronologic profiles in the High Crystalline Himalaya

Ph.D. Candidates Graduating with Degrees

David Bedford	Eric Tilton	Effects of Vegetation-related Soil Heterogeneity on Runoff, Infiltration, and Redistribution in Semi-arid Shrubland and Grassland Landscapes
Maureen Berlin	Robert Anderson	Knickpoint Migration and Landscape Evolution on the Roan Plateau, Western Colorado
Benjamin Burger	Jaelyn Eberle	Mammalian faunal change across the Paleocene-Eocene boundary in the Piceance Creek Basin, Western Colorado
Stan Hammon	Geoff Dorn	Computer Techniques to Aid the Interpretation of Salt Bodies and Stratigraphy in 3D Seismic Volumes
Corey Lawrence	Jason Neff	Aeolian deposition in the San Juan Mountains of Southwestern Colorado; The biogeochemical role of dust in soil formation and weathering
Laure Montandon	Eric Tilton	The impact of soil properties on soil NDVI and the quantification of the green vegetation fraction
Trevor Popp	James White	The Speed and Timing of Climate Change: Detailed Ice Core Stable Isotope Records from North GRIP, Greenland, and Mt. Moulton, West Antarctica

Graduate Student Alex McCaffree is monitoring groundwater level recovering readings during an aquifer permeability

Graduate Student Brent Aigler lowing a slug into the well to start an aquifer permeability test in Fraser CO

AAPG Student Chapter News

The CU AAPG Student Chapter had a positive year. Members of the chapter received several summer and full-time employment offers from petroleum companies. In addition, the chapter hosted several excellent speakers, conducted a field trip to Moab, and won the regional competition of the AAPG Imperial Barrel Contest!

Several members of the student chapter and Department accepted internships and full-time positions with companies. This summer, students will conduct internships with Cabot, Devon, El Paso, ExxonMobil, and Shell. This past year, students accepted full-time offers with El Paso, EnCana, ExxonMobil, Hess, and Shell.

The guest speakers were excellent for the 2008-2009 academic year. Some of the topics included eolian Norphlet discoveries in the deep water Gulf of Mexico, landslide run up in the Grand Canyon, sand injectites offshore Israel, and the Ekofisk Field in the North Sea.

AAPG and SEG student chapter officers on a field trip to Moab UT

Last summer the chapter took a trip to Moab, Utah which was an absolute success. Students were introduced to salt tectonics in Paradox Basin. Field trip sites included Onion Creek Dome, Upheaval Dome, Delicate Arch, and Colorado National Monument. This year, CU competed against Colorado School of Mines in the AAPG Imperial Barrel Contest and won the Rocky Mountain Region competition and was awarded $4,000. The Imperial Barrel Contest is a competition in which graduate students from various universities compete in a “real world” petroleum exploration assessment exercise. The CU team included Sait Baytok, Alicia Hewlett, Andrew Fuhrmann, Joe Nicolette, and Rachel Shaak. They were provided a dataset from the Barents Sea and asked to evaluate it for the exploration potential and present their recommendations to a group of professional judges from the petroleum industry. The CU team will compete against 11 teams from around the world at the 2009 Annual AAPG Convention in Denver in June.

This year, Cori Holmes was the recipient of the L. Austin Weeks Undergraduate Grant. The grant is awarded each year to active AAPG student chapters to assist undergraduate geoscience students with educational expenses. AAPG Student Chapter officers for 2009-2010 are President Andrew Fuhrmann, Vice President Sait Baytok, Secretary Danny Burns, and Treasurer Alicia Hewlett. Dr. Matt Pranter is Faculty Sponsor for the AAPG Student Chapter.

We thank Shell Oil Company for its financial support of our chapter.

Obituaries

Donald Lee Baars died Monday, July 7, 2008, at Lawrence Memorial Hospital. He was born May 27, 1928, in Oregon City, Ore., the son of George William and Happy Lela Wallace Baars. He graduated from Oregon City High School in 1946 and attended the University of Oregon and Vanport College. He graduated from the University of Utah in 1952 with a degree in geology. He returned to graduate school and received a Ph.D. in geology from the University of Colorado in 1965.

Dr. Baars worked as a geologist for Shell Oil Company and later as a research geologist for Conoco. He taught geology for three years at Washington State University and then became a professor of geology at Fort Lewis College in Durango, Colo. in 1968. Dr. Baars worked as a consulting petroleum geologist from Evergreen, Colo., until the mid-1980s, when he worked as a research petroleum geologist for the Kansas Geological Survey. He retired in 1996.

He was a member of the American Association of Petroleum Geologists, Society for Sedimentary Geology, a fellow of the Geological Society of American, twice president and honorary life member of the Four Corners Geological Society, Rocky Mountain Association of Geologists, New Mexico Geological Society, Grand Junction Geological Society and Kansas Geological Society. Dr. Baars received the Distinguished Public Services to Earth Sciences award from the Rocky Mountain Association of Geologists in 1991, and the Journalism Award from the American Association of Petroleum Geologists in 1997. He presented many talks to various professional societies and published more than 100 technical papers in professional journals and guidebooks.

Leland Bowen Culligan of Lafayette, LA passed away March 6, 2009. Leland received his MS degree in geology from the University of Colorado in 1948.

Emeritus Professor **Carl Kisslinger** died on December 31, 2008, at his home in Boulder, Colorado, USA. He was 82.

Carl earned his bachelor's degree in 1947, a master's degree in 1949, and a Ph.D. in 1952, all in geophysics from Saint Louis University. He was a faculty member there in the Department of Earth and Atmospheric Sciences from 1949 to 1972. He was named Professor of Geophysics in 1961 and served as department chair from 1963 to 1972. Carl moved to Boulder in 1972 to serve as a member of the Faculty and as Director of the Cooperative Institute for Research in the Environmental Sciences (CIRES), a post that he held for seven years. Carl received the Distinguished Service Award from the CU Board of Regents in 1993 and served as President of the Retired Faculty Association from 2003 to 2005. He retired from teaching in 1994. He was a founding member and early supporter of the Incorporated Institutes in Seismology (IRIS).

A seismologist, Kisslinger focused much of his research on earthquake fault zone processes, earthquake aftershocks, remote triggering of earthquakes, earthquake hazard analysis, and earthquake prediction. Much of his observational work was based in the Aleutian Islands, where he worked on the fundamentals of subduction zone seismology, as well as prediction research. A number of phenomena that have been suggested as precursory to an imminent earthquake were investigated. These included systematic rotation of focal mechanisms of local events before a stronger event, the isolation of possible asperities on the subduction thrust interface on the basis of the distribution of background seismicity and stress drops, variations in attenuation based on measurements of coda-Q, investigations of localized changes in seismic body-wave velocities prior to a strong event, and seismic quiescence. Carl is also well known for his research on the spatial and temporal distributions of aftershock sequences globally, with the goal of clarifying fault-zone properties on the basis of aftershock behavior.

Carl left a profound impact on the professional organizations and scientific community in his field. He became a member of the American Geophysical Union (AGU) in 1948, became a Fellow in 1969, served as Foreign Secretary (1974-1984), and as Secretary (1964-1968) and President (1970-1972) of the Seismology Section. In 1972, as President of the Seismological Society of America (SSA), he helped initiate one of the first American scientific exchange visits to the People's Republic of China. He became a Geological Society of America (GSA) Fellow in 1970 and an American Association for the Advancement of Science (AAAS) Fellow in 1981.

The CU Retired Faculty Association has established the Carl Kisslinger Graduate Student Awards Fund through the CU Foundation that provides research awards for outstanding graduate students at all CU campuses. Donations can be sent to: Carl Kisslinger Graduate Student Awards Program, CU Foundation, 4740 Walnut, Boulder, CO 80301.

Bevian St. Martin, age 84, passed away in June 2007. He was a geology student at CU during the 1950's. He always appreciated the outstanding professors and the excellent geology department for the education he received in order to become a petroleum geologist. He was a member of the American Association of Petroleum Geologists, the Houston Geological Society and the Society of Independent Petroleum Earth Scientists for many years.

Department Spotlight

Lang Farmer takes over as Departmental Chair on July 1st, 2009 and is naively looking forward to the job and to the opportunity the position affords for him to catch up with our many alumni. Lang has been on the faculty since 1985 and is generally interested in radiogenic isotope geology and the instrumentation that goes along with it. He runs a thermal ionization mass spectrometry (TIMS) lab housed in the Benson Earth Sciences Building and, with the help of long-time laboratory manager Emily Verplanck, has used the facility to carry out joint research projects with many current and past Departmental faculty and students. These projects have run the gamut of earth science disciplines, including igneous petrogenesis, Precambrian geology, tectonics, glaciology, groundwater hydrology, and biogeochemistry. Lang has also been involved in the development of a large, on-line database of Cenozoic volcanic rocks in western North America ("NAVDAT") that can be accessed at http://www.navdat.org, in case you are wondering about volcanic activity in your own backyard.

Alumni News

David Pyles (PhD 2004) is the Technical Research Project Manager for the Chevron Center of Research Excellence (CoRE) and a Research Professor in the Department of Geology and Geological Engineering at the Colorado School of Mines. David's research is focused on the structure/stratigraphy interactions in deepwater settings.

David has been awarded the 2009 J.C. "Cam" Sproule Memorial Award by the American Association of Petroleum Geologists for his publication "Architectural Elements in a Ponded Submarine Fan, Ross Sandstone, Ireland." This award recognizes the best paper in an AAPG publication by an author who was 35 or younger at the date of submission.

Quaternary alums of the 70's in geography and geology will remember **Bill Mahaney**, a geography Ph.D. student of **Nel Caine** and **Peter Birkeland**. Bill pioneered the study of alpine soils in the Front Range. He went to York University in Toronto and spent decades studying soils and glacial deposits at many sites overseas (see his book: Ice on the Equator). Lately he has tried to match up written accounts of Hannibal's 218 BC military march across the Alps with the geology to try to find the true route, even where did Hannibal burn rocks to reduce their size, so they could be cleared out before the army moved through! Thousands of men and 37 elephants were involved. Now retired, Bill has written a fictional account of the trip: The Warmaker: Hannibal's Invasion of Italia and the Aftermath (available at Amazon.com). It's a good read of a monumental military adventure.

David Pyles in the field in Ainsa, Spain

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From the Faculty, Staff and Students

Spherical projection of Benson Earth Sciences provided by Prof. Karl Mueller

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