

DEPARTMENT OF

GEOSCIENCES

COLLEGE OF EARTH AND
MINERAL SCIENCES



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From Our Department Head

Dear Geosciences Alumni and Friends:



As I write this in mid-November, the University is in a state of turmoil over the alleged horrific acts of one of our former assistant football coaches (Sandusky) and the resignation, retirement, or removal from office of Paterno, Spanier, Curley and Schultz. The rioting in the streets of State College stands in stark contrast to the vigils and pregame moment of silence at the Nebraska game. The remarkable success of fundraising efforts for the Rape Abuse and Incest National Network (\$416,000 by November 17, 2011; <http://www.rainn.org/ProudPSUforRAINN>) is a positive first step in restoring faith in Penn State. We will work as a community of Geosciences faculty, students, staff, and alumni to ensure that we learn from these events and become an even stronger center of excellence within the University and in the geosciences. You, the alumni, are an integral part of this effort, as much from the career advice and networking opportunities you provide our graduates as from your much-appreciated financial donations to the Department.

As you'll see inside, the awards and accomplishments of our students, faculty and alumni are building at an ever-increasing pace. We're developing new partnerships for furthering Earth-science education. Field camp is going strong, and remains our capstone experience for the majors. However, our students are also learning geology in such places as the Bahamas, New Zealand, South Africa, Utah, Texas, California, and Alaska. We are well positioned to weather this storm and emerge with a renewed sense of pride in our accomplishments and potential. Please stay in touch (lkump@psu.edu).

Sincerely,

A handwritten signature in blue ink that reads "Lee Kump".

Lee Kump
Department Head

From the Dean

Welcome!,

I am delighted to have Lee Kump on the leadership team in the College of Earth and Mineral Sciences. Lee is a recognized authority on ocean-atmosphere evolution and biogeochemistry. He has received numerous awards including being named Fellow of the Geological Society of America and the Geological Society of London. He has served in an editorial role for several prestigious journals, including review editor of *Science*.

In the twenty-five years that Lee has been a faculty member in the Department of Geosciences, he has undertaken several administrative responsibilities in addition to his teaching, research and service contributions. He has demonstrated a strong leadership presence and has earned the respect and admiration of faculty members, staff, and students. In the short time that Lee has been the Department Head, he has set a positive tone and shown a knack for getting things done. Geosciences will thrive under Lee's leadership and will continue to build upon the successes of his predecessors. I look forward to working with Lee during this pivotal time for Geosciences and the College.



Best Regards,

A handwritten signature in blue ink that reads "Bill Easterling".

Bill Easterling
Dean

Field School 2011

Professor Don Fisher

On May 26th, 26 Penn State geoscience students left the Deike Building parking lot to begin the Summer Field School, the yearly rite of passage in the Geosciences degree that most students take between their junior and senior years when they have completed the core of the curriculum. Although many are originally from Pennsylvania, the field camp class of 2011 was diverse, with 8 women and 18 men and numerous students from as far away as Saudia Arabia and Malaysia. Once the students arrived in Utah for the start of the course, they began a six-week set of exercises that takes advantage of the diverse geology and spectacular exposure of the western U. S., while following a counterclockwise loop that begins in Utah but includes a stay in Red Lodge Montana, the Yellowstone and Grand Teton National Parks, the Challis National Forest in Idaho and then back to Little Cottonwood Canyon in Utah.



The field camp dealt with record snowfalls this year, which had a serious impact on logistics. Here, the caravan traverses Beartooth Pass.



At the Book Cliffs, the students measured stratigraphic sections while using the concepts of sequence stratigraphy to interpret sedimentary strata. Despite an unrelenting rain-snow mixture, there were no complaints.

At the Stockton Bar in Utah, the students mapped Quaternary strata while walking in the footsteps of G. K. Gilbert.

The students spent 10 days at the Yellowstone Big-horn Research Association cabins along the Beartooth Front. Penn State has be-

longed to this organization, founded by Princeton in the 1920's, for nearly 50 years. The students learned the basics of geologic mapping at Elk Basin but also observed the local pig races, and due to the

unusual weather patterns, were able to enjoy numerous bonfires in the fire pit built by Penn State Alumni in 2000.



Here they are-- the contestants in this year's mustache-growing contest.

The students take a quick break while mapping the conglomerates and volcanics of the Challis National Forest in Idaho.



The Snowbird Ski Area was open when the field camp arrived in Little Cottonwood Canyon in late June, but due to deep snow drifts, "Duff's bench" was inaccessible. Still, all the students recognized at least two of the thrust faults that duplicate the stratigraphy in the mapping area (and the third was buried in snow). Many students stopped at the Alta Peruvian Lodge to look at the bench inscribed by Penn State Alumni to honor Duff Gold, the field camp director in the 1980's and 1990's.



On July 4th, the students marked the last week of field camp by organizing an International Food contest, with representative dishes from around the world.

Faculty Awards and Honors

Professor Richard Alley



Richard B. Alley, was the first recipient of the Stephen H. Schneider Award for Outstanding Climate Science Communication, Climate

One at The Commonwealth Club announced Friday, Aug. 26, during the 2011 Stephen H. Schneider Symposium in Boulder, CO.

The \$10,000 award is given to a natural or social scientist who has made extraordinary scientific contributions and communicated that knowledge to a broad public in a clear and compelling fashion. The award was established this year in honor of Stephen Henry Schneider, one of the founding fathers of climatology, who died unexpectedly in 2010.

Richard is also the recipient of a \$100,000 Heinz Award.

“Dr. Alley’s research on ice cores has provided an essential cornerstone to the study of environmental change,” Teresa Heinz, chairman of the Heinz Family Foundation, said today. “He discovered that such changes can be abrupt and massive and he is able to communicate these complex ideas in a clear and compelling way.” Now in their 17th year, the Heinz Awards honor visionaries who have made extraordinary contributions to the environment, a life-long area of commitment for the late U.S. Senator John Heinz.

Professor Sridhar Anandakrishnan



Sridhar has been elected Fellow of the American Geophysical Union. Sridhar is known as one of the top glacial geophysicists in the world and his

research has brought forth major discoveries

on the dynamics of ice sheets in Antarctica and Greenland. Only one in a thousand members of AGU is elected fellow each year, so this is a major and well-deserved honor.

Sridhar has also received a Fulbright Scholarship. He will be working in India.

Professor Dave Bice

Dave Bice won the G. Montgomery and Marion Hall Mitchell Award for Innovation in Teaching. Dave is well known nationally for his creative efforts to use STELLA modeling in hands-on learning modules in earth systems science curricula. This award is very well deserved and the results of Dave's hard work will soon be widely displayed in on-line courses.



Professor Tim Bralower



Timothy Bralower has been awarded a prestigious Fulbright Scholarship for a year of study in Australia at the University of New South

Wales--a fitting end to eight years as Geosciences department head.

Competition is extremely stiff for Fulbrights to Australia. The title of his project is "An Australian-US Partnership in Global Change Science and Education" and will focus on how earth system history can inform current problems of ocean acidification.

Professor Susan Brantley



Susan Brantley is the recipient of the 2011 Arthur L. Day Medal from the Geological Society of America (GSA).

The award recognizes significant contributions to geologic knowledge through the application of physics and chemistry to the solution of geologic problems. In the 63-year history of the award, Brantley is the first Penn State faculty member to receive the Arthur L. Day Medal while working at the University.

Professor Kate Freeman



Kate Freeman has been elected a Fellow of the Geochemical Society. This is a major honor for Kate who has established a long record of innovation at the forefront of organic geochemistry. On top of that

she is a respected national leader in graduate education.

Professor Peter Heaney



Peter Heaney won the Wilson Award for Excellence in Teaching. This is a well-deserved award for Peter. He is an unbelievably talented and dedicated teacher who gets rave reviews from graduate and undergraduate students. Peter can make the toughest concept easy to follow and the duller mineral fascinating.

Faculty Awards and Honors / Alumni Updates

Associate Professor Richard Brazier



Rick Brazier, Associate Professor of Geology and Mathematics at the Penn State Dubois Campus, has been awarded a George W. Atherton Award for Excellence in Teaching. The award is

the highest honor for teaching at Penn State, awarded to less than 0.1% of the faculty.

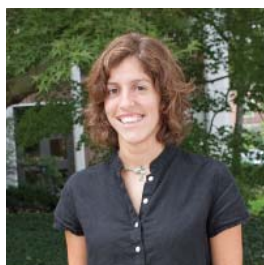
Rick, who currently serves as the Chair of the Earth Science Program at Dubois, is recognized for his hands-on, personalized approach to teaching both math and geology courses, and for building a B.S. degree program in Earth Science at Dubois. Rick is also actively engaged in seismological research in our department through collaborations with faculty and students.

Associate Professor Jenn Macalady

Jenn Macalady has been promoted to Associate Professor with tenure. Jenn's research on microbes in extreme environments has become well recognized on the international stage. Jenn has also proven that she is a dedicated educator and she has been assuming more leadership roles of key academic (i.e. the Biogeochemistry dual degree) and research (i.e. Center for Environmental Chemistry and Geochemistry) programs.



Associate Professor Kamini Singha



Kamini Singha has been awarded a George W. Atherton Award for Excellence in Teaching. The award is the highest honor for teaching at Penn State, awarded to less than 0.1%

of the faculty.

Over her short tenure at Penn State, Kamini has developed a stable of popular courses including Earth 100, Geosc 452 and Geosc 444. On top of this, her interest in extending opportunities through diversity led to the development of a summer field course The Hydrogeophysics Field Experience based on NSF-CAREER funding. Kamini uses a lot of creative and hand-on activities in her teaching and is known by students as both engaging and extremely dedicated.

Kamini has also been promoted to Associate Professor with tenure. Kamini has very rapidly become one of the national leaders in the area of hydrogeophysics. Beyond this she is an award-winning teacher whose innovation in the classroom and field ranges from general education all the way to the graduate level.

Professor Emeritus Art Rose

Professor Emeritus Arthur Rose has been awarded the William T. Plass Award of the American Society of Mining and Reclamation. The Plass award is the most prestigious award of the ASMR. The award recognizes Rose's outstanding contributions in the areas of mining, teaching, research, and environmental consulting as it relates to land reclamation. Rose is recognized nationally and internationally for his contributions in the field and receives this award in part for a career of contributions to mining and reclamation.



Student Award

Michael Cronin

Michael Cronin, BS '10, won the Eric A. Walker Award this past spring. The Eric A. Walker Award is given to the senior whose activities and achievements have enhanced the public esteem and renown of The Pennsylvania State University. Michael graduated from the Schreyer Honors College with two degrees: one from Geosciences and one from Petroleum and Natural Gas Engineering. During his college career, Michael was a member of the Penn

State Homecoming Executive Committee, The Fresh START Day of Service, University Park Allocation Committee, Swing Dance Club, and the Penn State Crew. He also volunteered at Schreyer Honors College events and at The Village Nursing Home.

Michael is now a graduate student at The University of Texas at Austin.



Michael with his parents Paul and Nancy Cronin

Alumni Updates

continued from page 14

Stephen J. Mitchell, '89 BS

I was recently promoted to Vice President, Central Division Manager for Weston Solutions, Inc. (WESTON), a Pennsylvania corporation providing environmental restoration and green development services worldwide. I now serve as one of the senior managers of the firm, leading operations across the midwest and southwest, and celebrate my 20th year with Weston this year.

I graduated with a B.S. degree in Geoscience from Penn State in 1989. I received an M.S. in environmental science from the University of Houston in 1999. I presently live in Albuquerque, NM.

Blair Tormey, '96 BS

I will serve this year as Vice-Chair of GSA's Southeast Section. Also, along with my wife, Cheryl Waters-Tormey, I will co-chair GSA's Southeast Section meeting to be held in Asheville, North Carolina, March 31 - April 2, 2012. Information on the meeting can be found at <http://www.geosociety.org/Sections/se/2012mtg/>.

Rich Sucher, '97 MS

Rich Sucher now lives in Boston, Massachusetts and is a science teacher at Boston Trinity Academy.

Staff Changes

Lisa Guiser

If you have been in the halls of the 4th and 5th floors of the Deike Building over the last few years, you might notice a few new faces and some changes in our staff. Of course, there still are a couple of oldies (dare I say) but goodies still hanging around.

Our new office manager, Tina Vancas, joined the department in June. She brings a lot of great staffing and budgeting experience with her from her previous positions. Her main duties include supervising the staff; managing general, gift and endowment funds; department manager; appointments not on research funds; visa and international visitors; Field Trips surcharge; Fort Valley program; P&T; Strategic Planning and the CIC survey.

Devon Hegarty is our new Undergraduate Program Assistant starting with us in July. She brings a wealth of knowledge of the university with her from her over 25 year tenure of working in various departments. Her primary duties are FTCAP and advising Undergraduate students; course scheduling; scheduling of classrooms, final exams and courses; field camp; SRTE; ordering textbooks; Listservs; Undergraduate Scholarships/Endowment Awarding; and Undergraduate recruitment (Spending a Summer Day and Fort Valley M-SEA Program).

Our administrative support coordinator for the Graduate program is Shari Walczak. She has been with the department for over four years now. She has an extensive background having worked at a few offices at Penn State, but also having working at the Ohio University. The primary responsibilities for Shari's position are graduate admissions; advise graduate students on policies and procedures; graduate assistant and fellowship appointments and exam processing (candidacy, comprehensive, final oral defense of thesis or dissertation).

Lou Klindienst is the Administrative Support Coordinator who is now handling the administration of proposals and awards for the department. She has over 30 years of experience at the university. Her primary responsibilities are pre- and post-award management; proposal submission; and appointments on research funds.

Linda Miller is the Financial Staff Assistant for the department and

has been with the department the longest, 24 years. She's worn many different hats over the years and had many different duties. Her main duties now are e-forms for research and general funds; wage appointments; bi-weekly wage payroll; travel cash advances; reimbursement of travel and group meals; and p-card reconciliation.

Lisa Guiser is the administrative support coordinator who handles publicity and external relations. She's been with the department now a little over three years and brings a plethora of experience from the 25 years she worked across the university. Her main responsibilities are maintaining the department website; publishing the annual newsletter; industry recruiting; alumni relations; development activities; departmental photographer; facilities; and key access coordinator.

Antonia Mooney, or Toni as she's known to everyone, is the administrative support coordinator for the Africa Array program. Toni has been with the department now for three years and brings alot of great experience with her, too. Her primary duties are all things Africa Array. If it needs to be done, Toni does it or finds a way to have it done.

Steve Swavely is the Research Support Technologist for the Rock Mechanics Lab and the go-to guy when something needs to be fixed. Steve's primary responsibilities are to maintain all lab equipment and testing fixtures; load frames and high pressure pumps; repair/replace all hydraulic, pneumatic and electrical systems; order and maintain a small parts inventory; interact with faculty, staff, students and post-docs to insure continuing testing schedules and to design new fixtures and work any new system configurations as needed.

Denny Walizer, research associate, is another long-time employee, having been with the department for 20 years. Other than being pretty much indispensable, his primary job duties are manage a few isotope labs; department liaison with the Office of the Physical Plant for facilities, maintenance, renovations and inventory; and the department safety representative.

This is the staff of the Department of Geosciences. If you need us for anything, just give us a call. The main number for the department is 814-865-6711 or email us. You can find our emails on the staff page of the website at <http://www.geosc.psu.edu/staff/directory>.



Back row: Denny Walizer, Devon Hegarty, Linda Miller, Shari Walczk
Front row: Lisa Guiser, Toni Mooney, Tina Vancas, Steve Swavely Not pictured: Lou Klindienst

Meet Our Students

Rachel Lauer PhD Student

Descending almost two miles to the seafloor in the Alvin submersible, we watched the light recede, replaced by bioluminescent trails that continued all the way to the trench. Our mission was to download four years of data from seafloor observatories located on either side of the Middle American trench, offshore Costa Rica. I had never imagined having the opportunity to participate in something so mind-blowing, and this was my second semester of the PhD at Penn State. My love of Geology came later than most, many years after receiving a degree in Psychology from Bryn Mawr College. After several years at a geophysical consulting company, I decided to “legitimize” my title of geophysicist and pursue a degree in Geology. I chose a small Masters program at Radford University in southwest Virginia, with a degree in Environmental Engineering Geosciences, and a strong emphasis in hydrogeology. Fortunately, they offered me a teaching fellowship despite my lack of formal training in Geology, and I fell in love with both Geology and teaching. Despite plans to return to industry after getting my Masters, I decided to stay in school and continue my study and research in hydrogeology at the PhD level.



Rachel inside the Alvin submersible

I chose Penn State and my advisor Demian Saffer, after learning about his exciting research in submarine hydrogeology and earthquake mechanics. For my PhD, I develop numerical models of subduction zones to investigate the “plumbing” of these systems using data obtained through ocean drilling, and lab experiments on recovered sediments to constrain how parameters evolve during subduction.

In particular, I expand on previous modeling studies by looking at the role of splay faults in transporting fluids from the plate boundary to the seafloor, and developed a “fluid budget” for the forearc. We also use the models to determine the fluid pressure distribution, which has a profound impact on the strength and behavior of the plate boundary through changes in effective stress.

Dan Kohl MS Student



Dan at Elk Basin

Specializing in sedimentation, stratigraphy, and petroleum geology, I just completed the first year of a master’s program in geology. Working within the Appalachian Basin Black Shale (ABBS) Research Group (Dr. Mike Arthur, Dr. Terry Engelder, Dr. Rudy Slingerland), my thesis aims to build a sequence stratigraphic and depositional model for the mid-Devonian Marcellus shale and associated strata. My project integrates core and outcrop data from Pennsylvania’s Valley and Ridge province with well log data on the plateau to construct a regional lithofacies model. This model is used to interpret accommodation and sedimentation rate variations, providing insights into the properties of the Marcellus Fm. in the producing regions. Preliminary results of his research were presented at the 2011 AAPG annual convention and exhibition in Houston, TX. Members of the ABBS group also annually present their work in the fall to the oil and gas companies who fund their research.

I came to Penn State after receiving a bachelor’s degree in geology from Washington and

Lee University, VA. I spent the summer of 2010 as a teaching assistant for Penn State’s field camp and assisted with ABBS’s Marcellus coring operations. I spent the summer of 2011 interning with Chevron Corp.

Courtney Kolesar Undergraduate Student

I am a senior in Geobiology / Astrobiology and a native of State College. For the past four years, I have been a part of the Penn State Geosciences Department. Knowing only that I liked the outdoors and science in general, I started my college career in the geosciences.

After my first geosciences class, I discovered my passion for earth processes and for the next two years I was set on becoming a volcanologist. My focus drastically changed, however, when I took the geobiology class. The mystery of the origin of life captivated me and caused me to want to pursue a career which would facilitate my need to discover the first life form on Earth. In the fall of 2010, my interest shifted a little more after taking a geomicrobiology class with Dr. Jennifer Macalady.

I love how biology and geology could both be used to answer questions about the history of the earth. Shortly after taking the class, I began working in Dr. Macalady’s geomicrobiology lab researching the microbial distribution of acid mine drainage systems. I am currently working on my senior thesis and loving every minute of it.



Courtney collecting samples in the field.

Student Awards and Honors

Undergraduate Awards

The Joseph Berg Award for Undergraduate Research in Geosciences: Stallone Teng, Leah Toms, Gregory Smith

The Barton P. Cahir Award Endowment in Earth and Mineral Sciences: Stephanie Cook

The Frank and Lillie Mae Dachille Memorial Award in Geochemistry: Leah Toms, Daniel Barley, Genevieve Elsworth

David P. "Duff" Gold Undergraduate Scholarship Fund in Geosciences: Martin Ackley, Andrew Ryan, Lindsey Anderson, Devin Wolf

John and Nancy Griffiths Scholarship in Geosciences: Kevin Ogorzalek, Cody Bomberger, Andrew Lowy

The James and Nancy Hedberg Scholarship in Geosciences: Katlynn O'Malley, Miguel Echevarria, Martin Ackley, Stephanie Cook, Gregory Drelich, Irena Gorski, Brandi Niles

The Scholarship from the Arthur P. Honess Memorial Fund: Joseph Frank, Thayne Ainsley, Max Solack-Zelenevich, Andrew Ryan, Rebekah Hoffner, Cody Bomberger, Michael Cappos, Sarah Sharkey, Dustin Lipik, Andrew Lowy

The Benjamin F. Howell, Jr. Award in Geosciences: Sara Fritz, Erika Frey, Cody Bomberger

Kappmeyer-Isaacs Field Camp Award: Gregory Drelich, Neil Abdalla

The Scholarship from the Ronald A. Landon Endowment in Hydrogeology: Erica Folio, Anthony Moscatello

The Robert F. Schmalz Award in the Department of Geosciences: Kevin Ogorzalek, Daniel Bissot, Nathaniel Wysocki, Muhammad Mohd Bukhari, Johnathan Quatra, Alexander Neely, Sara Fritz, Chiara Orsini, Nina Bingham, Lindsey Anderson, Irena Gorski, Samuel Weaver, Michael Cappos, April Stout, Muhammad Ajwad Azizan, Daniel Barley, Rebekah Hoffner, Dustin Lipik

Donald B. and Mary E. Tait Scholarship in Microbial Biogeochemistry: Alexandra Pearce, Rachel Kronyak, Claudia Shuman, Michael Hegemann, Andrew Ryan, Lindsey Anderson, Sarah Sharkey, Devin Tierney

Edwin L. Drake Memorial Scholarship: Alexandra Carone, Anthony J. Moscatello, Sarah Sharkey

Graduate Awards

Bunton-Waller Graduate Award: Marsella Kachingwe, Cristo Ramirez

Cheasapeake Energy Scholarship in Geosciences: Alex Burpee, Travis Call, Bryan Kaproth, Daniel Kohl, Claire Mondro

ConocoPhillips Fellowship: Elizabeth Denis, Katelyn Olcott

ExxonMobil Research Grants: Matt Travis

Funds for Excellence in Graduate Recruitment (FEGR) Assistantships: Sonny Harman, Katelyn Olcott, Kiya Wilson

Marathon Alumni Centennial Graduate Fellowship in the College of EMS: Jennifer Alpern, Ellen Chamberlin, Matt Fry

Charles E. Knopf, Sr. Memorial Scholarship: Laurence Bird, Piyali Chanda, Max Christie, Katy Gerech, Daisuke Kobayahi, Jon Schueth

The Paul D. Krynine Memorial Fund: Brett Carpenter, Ellen Chamberlin, Mike Cleveland, Ying Cui, Sara Elliott, John Fegyveresi, Matt Herman, Cassie Knight, Lauren Milideo, Rachel Piotraschke, Christine Regalla, April Roberson, Russ Rosenberg, Marco Scuderi, Karen Smith, Ryan Swanson, Heather Tollerud, Tiffany Yesavage

NSF Graduate Research Fellowship: Katy Gerech, Ryan Swanson

Hiroshi and Koya Ohmoto Graduate Fellowship in Geosciences: Jamie Brainard, Clay Magill, Kris Peterson

Richard R. Parizek Graduate Fellowship: Megan Carter, Heather Graham

Scholten-Williams-Wright Scholarship in Field Geology: Yunhui Tan

Shell Geosciences Energy Research Facilities Award: Daniel Kohl, Travis Call, Alexander Burpee, Laurence Bird, Yunhui Tan, Claire Mondro, Ashlee Dere, Elizabeth Denis, Heather Graham, Halldor Geirsson

University Graduate Fellowship (UGF): Jason Boettger, Nick Holschuh, David Oakley

Barry Voight Volcano Hazards Award: Halldor Geirsson

We greatly appreciate the generosity of the many contributors who make these awards possible!

43rd Annual Graduate Student Colloquium

Please join us in recognizing the outstanding achievements of the following students:

Poster Presentations



First Prize Award
Xuhua Shi



Second Prize Award
Kristin Morell



First Prize Award
Daniel Kohl



Second Prize Award
Alex Burpee

Energy-Related Presentations

Oral Presentations



First Prize Award
Monica Carvalho



Second Prize Award
Christen Miller



Second Prize Award
Rachael Piotraschke

Oral Presentations by a PhD Student (Pre-Comprehensive Exam)



First Prize Award
Ashlee Dere



Second Prize Award
Nicole West



Second Prize Award
Luke Zoet

Oral Presentations by a PhD Student (Post-Comprehensive Exam)



First Prize Award
Bryan Kaproth



Second Prize Award
Claire Fleegeer



Second Prize Award
Elizabeth Herndon

We would like to thank the Shell People Services Division of Shell Oil Company for their donations of prize money and their generous financial support.

The 44th Graduate Colloquium will be held March 16 & 17, 2012.

Denver Field Trip

Professor Mark Patzkowsky



Class photo at KT Boundary

Once again the Geobiology (Geosc 204) class visited Denver April 15-19 as the capstone experience for the course. The purpose of the field trip was to observe the paleontology of the Denver Basin while also emphasizing the stratigraphy, structure, and hydrogeology of the Front Range. We use the Denver Basin field trip to emphasize many of the core concepts introduced in the course, such as geologic time, reconstructing ancient ecosystems, and how knowledge of the past helps to understand current issues such as the availability of water for industrial, agricultural, and residential use. Because the size of the class has grown (38 students plus me and a TA), we used a bus to get us to the airport (BWI) for our flight to Denver and to take us around the Denver Basin. This was much easier and safer than the multiple minivans we used in the past!



Looking for plant fossils

On Day 1, we studied the Paleozoic and Mesozoic sections at Red Rocks Amphitheatre and Dinosaur Ridge, which included seeing dinosaur bones in the Morrison and dinosaur trackways in the Dakota Sandstone. Late in the day we hiked up Green Mountain to see the alluvial fans shed from the Laramide Uplift.

On Day 2, we spent the morning hiking and mapping the Front Range stratigraphy, which is beautifully exposed in Roxborough



Students teaching students

State Park south of Denver. This is a wonderful way to reinforce the paleontology and geology studied on Day 1, and it is a nice exercise for those students who are getting ready for field camp the following summer. The last half of Day 2 was spent in the Denver Museum of Nature and Science studying the Prehistoric Journey exhibit and touring the Big Bone Room led by Curator of Paleontology, Ian Miller.

On Day 3, we focused in the Cenozoic history of the Front Range by climbing Castle Rock, where we discussed the Castle Rock Rain Forest, which is unfortunately covered by a highway and is no longer available for us to sample. In the afternoon of Day 3, we made it to the K-T boundary section at the West Bijou Creek site on the Plains Conservation Center. This is always a highlight of the trip. The weather was beautiful this year – meaning no blizzards! – and I am looking forward to the next time. It is such a wonderful experience for the students.



Paleocene plant fossils

The newsletter was prepared by Lee Kump, Department Head and Lisa Guiser, editor. For comments or suggestions, please contact Lisa at alumni@geosc.psu.edu or 814-863-7072.

Earth & Space Science Partnership

Professor Tanya Furman

Preparing the next generation of students and citizens to address questions of resource and energy use, climate change, land development and natural hazard mitigation is a big job, and one that requires collaboration across disciplines and the educational spectrum. In September, the Earth & Space Science Partnership led by Professor Tanya Furman received a grant of \$9.2 million from the National Science Foundation for a five-year project to improve the teaching and learning of Earth and Space Science (ESS) in underserved urban and rural public school districts across Pennsylvania.



Measuring weathering rates on marble tombstones, Boalsburg, PA

The Partnership involves over a dozen faculty members from Geosciences, Astronomy and Education at the University Park, Brandywine and Harrisburg campuses. The primary goals of the partnership are to understand the conceptual development of student learning in ESS throughout the K-16 continuum, and to support current and future teachers across the state in engaging students with the significant and complex questions of modern Earth and Space science. The large spatial and temporal scales that characterize data collection, processes and phenomena in these fields are particularly challenging for young



Teachers observing sedimentary structures near Port Matilda, PA

learners, so the partnership is conducting research on student conceptualizations that will help teachers present ESS material in ways that encourage age-appropriate deep learning rather than memorization which can lead to



Teachers measuring beach profiles at Cape Henlopen State Park, Delaware

life-long misconceptions. By focusing on the Big Ideas of ESS, developed through dialogues involving the National Academies, the National Science Foundation and the disciplinary societies, teachers will be encouraged to emphasize both the relevance and the robust beauty of the science to their students. The partnership is offering week-long teacher professional development workshops in summer 2011 that focus on Plate Tectonics, Climate, Solar System Astronomy, and Hurricanes and the Atmosphere; in 2012 the team will add Energy as a theme for both research and professional development. Initiatives for undergraduates who hope to become teachers include two new ESS courses, a new curriculum that integrates Earth Science with Astronomy, and placement of pre-service teachers in the classrooms of the partner school districts, with a particular emphasis on Philadelphia, Harrisburg, Reading and York. Penn State graduate students are participating in the research as well as working with teachers to develop and implement curricular materials that align with state and national standards and also make use of the rich natural data sets available from the geological and astronomical communities. Penn State is proud of the national leadership this group is providing in this critical area of learning and citizenship.



Teachers measuring beach profiles at Cape Henlopen State Park, Delaware

Contributors to Geosciences July 2010-July 2011

Rick and Michelle Abegg
Lance C. Anderson
Robert and Barbara Avakian
Ronald and Susan Balazik
Vanessa Balint and Kevin Gallagher
Joseph and Glenda Berg
Claude E. Bolze
Patricia and Charles Brinkley
Judith and Richard Brown
Jay Byerly
John and Karen Campbell
Alan and Lorna Davis
Beverly and Jeffrey DeJarnett
Friends of Peter Deines
Elizabeth and John Dougherty
James A. Doutt
Richard and Karen Engelder
Karl and Cathy Evans
Martin Farley
Charles and Katherine Faust
Marjorie and Robert Folk
Kevin Furlong
Thomas and Pamela Gebbie
Marston T. Giddings Jr.
David and Giselle Gordon
Lloyd S. Grearson, Jr.
Charles and Karen Grenot
Michael and Geula Gross
Weixing Guo and Yuejih Xue
Alexander M. Hamling
James and Nancy Hedberg
Sharon and Michael Hill
Bryan and Nancy Hoke
Stephanie and David Houseknecht
John Foster Houser
Benjamin F. Howell Jr.
Oscar and Wanda Huh
Gary and Katherine Hummel
Catherine and Jeffrey Jahn
Solomon and Esther Jarmell
Stephen A. Johnson
David and Janet Johnston

Garry Kramchak & Sharon Kimble-Kramchak
Charles E. Knopf, Jr.
Bruce and Karen Kobelski
Lee and Michelle Kump
Lucy and Robert Leeper, Jr.
John and Linda Leftwich
Earle S. Lenker
Alvis Lisenbee
Richard and Margaret Lowright
Linda E. Mark
Michelle and Jon Major
Janet and Joseph McNally
Beth A. Moore
Frank and Carolyn Moorshead
Nancy Niemann
Hiroshi and Koya Ohmoto
Angelo and Clara Okuma
Amanda L. Ott
Roberto and Paulinda Pabalan
Melvin and Patricia Podwysocki
Daniel E. Popovich
Janice and Thomas Reeves, Jr.
Linda Turnley Reif
Anthony L. Riccardi
Marlene and Robert Ryder
Stephen and Joanne Salyards
Roland and Debra Sauermann
Martin and Josephine Schoonen
Stephen and Barbara Sears
Rudy and Ellen Slingerland
Robert and Gloria Smith
Allen and Karen Spelman
Reggie and Alfreda Spiller
Glenn Spinelli and Susan Bilek
Karen Stierman and Robert Cohen
Carl and Sheryl Taylor
Steven M. Tobias
Alfred and Elizabeth Traverse
Kenneth and Brenda Turner
Stephen J. Urbanik
Joseph and Mary Watson
Matthew L. Werner, III

Thank you for supporting our programs!

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Barton P. Cahir Award Endowment

R.J. Cuffey Fund for Paleontology

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Richard R. Parizek Graduate Fellowship

Petroleum Geosystems Enrichment Fund

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Geology

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Graduate Student Colloquium

Summer Field Camp

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Alumni News

Robert L. Folk '46 BS, '50 MS, '52 PhD

Currently working on nanobacterial precipitation of kaolin... presented at Denver GSA. Wish I could consult with Tom Bates, who taught me mineralogy and clays in the 1940's. Still happily married to Marjorie Thomas, whom I met at the Nittany Co-op in March 1946. Recently elected to UTeas Hall of Distinction for faculty and alums I taught sed., rocks etc. here from 1952 to 1988, but still at research with electron microscope (another legacy of Tom Bates).

Jack Ciciarelli '67 MS, '71 PhD

Since my retirement from the EMS faculty (36 yrs @ the Beaver Campus teaching G. Sci. & Geogr. courses), I am still teaching. I now work, part-time, for RiverQuest. We're a non-profit organization that teaches Environmental Science on Pittsburgh's 3 rivers to students between 5th & 12th grades. We have a boat, Explorer, the world's first working "green" boat that can accommodate about a 100 students per cruise.

We have the students do experiments w/ water chemistry, sample plankton, collect macro-invertebrates, etc. to the end of ascertaining the enviro. health of the river ecosystems in Pittsburgh. A typical Envir. Sci. "field trip" begins at 9:00 or 9:30 AM and we return to the dock around 2:00 PM. Students bring their own lunches and eat while underway.

For a more complete explanation of what we do, go to: <http://www.riverquest.org>.

Dan Stephens '71 BS

My career has been mostly in hydrogeology, an interest which began while attending a rally in downtown State College on the first Earth Day in 1970. I completed my degree in geoscience and was honored to receive the Ellen Steidel Award in 1971. After a job with an engineering firm, I attended Stanford for an MS in hydrology. After another brief position as a hydrogeologist in Long Beach, CA, I went to the University of Arizona and completed my doctorate in 1979. My wife, Deborah, and I then moved to Socorro, NM where I joined the hydrology faculty at New Mexico Tech. I eventually became geoscience department chair, interestingly while Larry Lattman, my geomorphology prof at PSU, was president of NM Tech. Around this same time I also started a small consulting practice, Daniel B. Stephens & Associates, Inc., in a bedroom of our home. The consulting business blossomed, and I took my wife, two young boys and our handfull of employees to Albuquerque in 1989. We grew the firm and it now has about 110 employees with several offices, spanning from Austin to Santa Barbara, doing water resources and environmental consulting throughout the country. I somehow managed to continue to publish while consulting, including a textbook entitled 'Vadose Zone Hydrology'. We recently completed a sale of the company to the employees, but I still work full time in the Albuquerque office, doing mostly technical work often related to expert testimony and remain as chairman of our board of directors. I find it curious that the current president of our firm, Mike Bitner, is also a PSU grad. In addition to serving on various boards, adjunct faculty positions and teaching occasionally, I am also very active with

the National Groundwater Association and will become the chair of its Science and Engineering Division this coming year.

Thanks to Penn State for an excellent education!

Marilyn L. Fogel '73 BS

This past summer (2011) I was on a field trip to the remote Belcher Islands and Richmond Gulf that are in Northern Quebec, in Inuit country. On the trip was former student Paul Strother (Boston College). When we both exchanged who we were we were surprised that we'd both been through Penn State within a year of each other. I was in attendance from June 1970 to August 1973. He arrived about a year later and stayed until 1974. Even though we both got our official BS degrees from Biology, we both gravitated to the more interesting and dynamic Earth and Mineral Sciences Dept.

I worked with Dr. Peter Given, organic geochemist, who started me on the road to my current career as a Geobiologist at the Carnegie Institution of Washington. I worked for Dr. Given the summer of 1973.

Paul Strother got his start in his career as a micropaleontologist with Dr. Al Traverse. He continued on with a PhD from Harvard University and traces his beginning to work at Penn State.

We had this photo taken to share in the newsletter.



David Bish, '77 PhD

After 23 years at Los Alamos National Laboratory, I took a faculty position at Indiana University in 2003 as the Haydn Murray Chair of Applied Clay Mineralogy. For the past year I have been the president of the Mineralogical Society of America.

Rick Abegg '83 BS

Chevron transferred me from Houston to Pittsburgh to work the Marcellus Shale.

Keith Saroka '93 BS

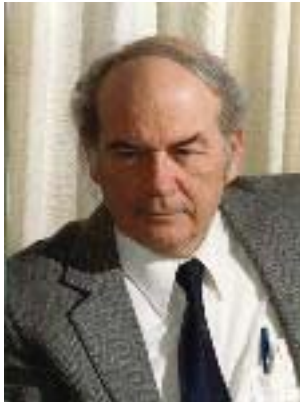
Living in West Chester, PA. 18 years science teacher, Tinicum School in Essington, PA. 10 years as District Middle School Science Department Head. Married to Susan (SECED 1993), with 3 children.

For More Alumni News, see page 5

Department Losses

Professor Emeritus David "Duff" Gold

LEONARD F. HERZOG, II: 1926-2011



Len Herzog passed away on February 16 after a protracted battle with Parkinson's disease. He was born in Syracuse, New York on June 17, 1926, raised in Hollywood, California, graduated from Hollywood High School (valedictorian) served in the U.S. Army during World War II, obtained his Certificate in Civil Engineering at Oregon State University, and B.S in Geology from Caltech. He earned his PhD in Nuclear Geophysics from MIT in 1952, and subsequently was hired as Director of their Mass Spectroscopy Laboratory. He was a visiting scientist at the Geophysical Laboratory (Carnegie Institute of Washington) when he was recruited in 1956 by Ben Howell to join the newly formed Geophysics and Geochemistry Department at Penn State.

Len Herzog was a pioneer in the design and development of mass spectrometers for measuring the concentration of isotopes, particularly of the lighter elements. His vision to work on the stable isotopes was prophetic at a time when the major research effort and funding was on the radiogenic isotopes and age-dating. I am not certain anyone at that time realized the full import of fractionation between isotopes over such a wide range in temperature and pressure, and their future role in understanding the conditions for the formation of minerals, compounds and biological tissue, including the ageing processes in biological species, but he did perceive that the road to the science and understanding required instruments capable of precisely measuring their concentrations of specific isotopes in solids, liquids and gases. It opened the door to studies as far reaching as mantle petrogenesis, cosmic evolution to terrestrial climate changes.

He formalized a dream initiated while at MIT, to establish a commercial venture, dedicated to the development and manufacture of mass spectrometers. Nuclide Analytical Services started on North Atherton Street near the Bus Station and morphed into Nuclide Corporation in 1961 at a site on West College Ave., adjacent to University Drive. One of his early creations at Penn State "old faithful" (decommissioned during the mid 2000's) was the dominant source of carbon and oxygen



isotopes world-wide for more than 3 decades. It is largely through his efforts that Penn State established a track record in the study of stable isotopes. One of his students, Peter Deines went on to run the stable isotopes laboratory when he gave up his adjunct position at Penn State in 1968 to become fully engaged in the design and construction of custom-built mass spectrometers and other high-tech instruments at Nuclide Corporation. We honor Len for providing the means of tracking such diverse issues as climatic changes in Antarctic ice cores, upper mantle processes and to planetary evolution. The Deike Building residents can thank him for the air-conditioning system.

Photos were provided by the family.

RUSSELL R. DUTCHER 1927-2011

Russell R. Dutcher was the E & MS College Distinguished alumnus for 2008. He was born October 28, 1927 in Brooklyn N.Y., raised in Montclair, N.J., and Sheffield, Maine. He graduated of Berkshire High School, 1945, University of Connecticut (B.A. Geology, 1951), U Mass (M.S. Geology 1953), and Penn State (PhD Geology, 1960) to



become Assistant Director of the Coal Research Center here under the tutelage of William Spackman. He was appointed to a faculty position in the Department of Geology and Geophysics in 1965, and subbed as department head during Lauren Wright's field expedition to Death Valley each winter. He also served as Field School director and established a Penn State presence at the YBRA field station near Red Lodge, Montana. He left Penn State in 1970 to become chair of the Department of Geology at Southern Illinois University Carbondale, where he established the Coal Characterization Laboratory and founded the Coal Research Center. He was appointed Dean of the College of Science in 1983 and served in that position until his retirement in 1993. Apart from his stewardship as Editor-in-Chief of the International Journal of Coal Geology, his professional services have been recognized in the Gilbert H. Cady Award by the Geological Society of America, the Martin C. Van Couvering Memorial Award from the American Institute of Professional Geologists, and the first "Russ Dutcher" Distinguished Service Award from the Yellowstone-Bighorn Research Association.

Russ was an able administrator, a popular instructor, and a loyal Penn State fan. He touched the lives of many Penn State students, during his tenure at Penn State and SIU Carbondale. A fund has been established to build a dormitory in his name at the YBRA Field School campus, near Red Lodge, Montana (contact Duff Gold, <gold@ems.psu.edu> for details).



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