Geology & Planetary Science Newsletter

2006-2007

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Klyuchevskoy Volcano in Kamchatka, Russia, where PhD candidate Shellie Rose uses thermal infrared satellite data in combination with field-based methods to track thermal changes at the volcano.

Two New Faculty Join Geology & Planetary Science

In January 2007, the Department of Geology and Planetary Science grew in number and in stature with the arrival of Drs. Emily Elliott and Daniel Bain from Menlo Park, California, where both had completed postdoctoral appointments with the U.S. Geological Survey. Prior to working at USGS, Bain and Elliott received their doctorates from Johns Hopkins University in the Department of Geography and Environmental Engineering. There they worked in Dr. Grace Brush's lab group, which is noted for its research on the Chesapeake Bay watershed. Elliott and Bain bring a variety of experiences and new expertise in geological and environmental science, complementing the department's existing strengths and extending its research focus to additional important contemporary issues.

Dr. Elliott, who grew up in southern Maryland, is an emerging national expert on the sources and fate of air pollution. Pittsburgh is ground zero for atmospheric pollution as regional coal combustion provides electric power for a significant portion of the U.S. As a result, soils in the Pittsburgh region receive some of the highest loads of atmospherically deposited mercury, nitrogen, and other coal combustion by-products in the country. Dr. Elliott's research makes her uniquely qualified to address this deposition, as she is completing a national study of the isotopic concentration of nitrate (nitrogen and oxygen) in precipitation. Characterization of these isotopic compositions provides unprecedented information on the sources of air pollution and the processes determining the fate of this contamination in the atmosphere.

Dr. Bain, a native of southeastern Ohio, brings a wealth of research experience in geomorphology, geochemistry, and hydrology to the Department. Dr. Bain's postdoctoral work with the USGS focused on water-geochemical interactions in two very different settings. One aspect characterized the isotopic systematics of

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Letter from the Chair

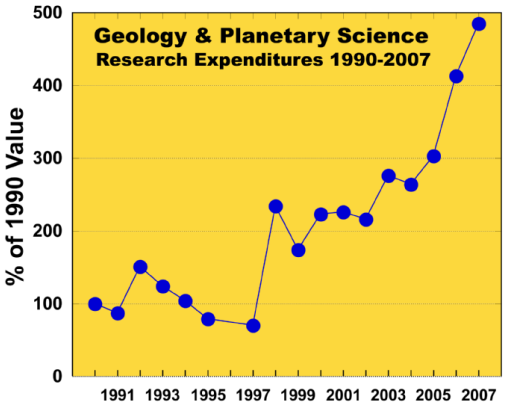
Dear Alumni and Friends:

I'd like to take this opportunity on the Chair soapbox to highlight one of the most significant accomplishments of our department in the past few years: continued growth in research funding from external sources. Why is this important to the mission of Geology and Planetary Science? Certainly, in the research arena, more funding from agencies such as the National Science Foundation, NASA, DOE, and EPA is generally correlated with increased publication output, greater standing in the research community, and increased department visibility both within and outside of Pitt. But research funding also reverberates to other parts of our mission. More funding means greater graduate student support, allowing our students to focus on their research projects and high-quality scientific manuscripts. External funding allows paid participation of undergraduate students in faculty research programs — and these very often lead to exciting undergraduate research projects and honors theses, not to mention opportunities to carry out field work in remote and sometimes exotic locations throughout the world. High levels of funding result in more visits and seminars from external collaborators, and a generally more vibrant and dynamic department atmosphere.

Now let's look at the numbers. The university likes to track research expenditures as a measure of research funding productivity — this is the actual amount of external funds researchers spend on things like lab supplies, field work, and student support. As you can see in the accompanying chart, our research expenditures have increased fivefold since 1990, with a nearly monotonic rise over the last ten or so years. This increase is particularly impressive considering that (1) the number of tenured and tenure-stream faculty in the department was cut from twelve in the mid-1990s to eight for most of the new century (we now have nine full-time positions counting the one shared by Drs. Bain and Elliott); and (2) federal research funding in the earth sciences has taken a significant hit over the past several years. In other words, we're doing more with less in every way. Training the next generation of geoscientists remains a top priority for us, but I thought you'd like to know that we are also making great strides in elevating the Geology and Planetary Science research program toward those of the upper tier of geoscience departments, commensurate with the University of Pittsburgh's standing as one of the nation's top public research universities.

With best wishes,

Brian W. Stewart



Two New Faculty (continued from page 1)

the oxidation of chromium via manganese oxides. This research will aid in understanding and remediating environmental contamination from metals, including local brownfield sites related to steel production. Another aspect of Dr. Bain's postdoctoral research focused on chemical weathering in the Santa Cruz terraces of California. His study is one of the first to couple basin-scale chemical dynamics with extensive characterization of soil chemical weathering rates.

The simultaneous arrival of Elliott and Bain is not simply a big coincidence. They have been working together since graduate school and were married in 2005. They join the department in a relatively novel arrangement, by splitting a faculty position. Both teach half the load of a normal faculty member and receive half of a salary. However, they also have a great deal more time to devote to research. In a market where dual-career couples and the "trailing spouse" are sources of consternation and bitterness, this arrangement elegantly solves many potential problems.

As both professors have strong interests in geochemistry, their arrival has resulted in enhanced analytical capability in department laboratories. New analytical equipment includes an ion chromatograph for the analysis of major anionic species in water and a gamma spectrometer for sediment dating (measures concentrations of gamma decaying radio-isotopes), as well as an upgrade to the department thermal ion mass spectrometer and an additional gas isotope mass ratio mass spectrometer. Laboratory renovations for Bain and Elliott are scheduled to be completed in May 2008.

Dr. Bain will be teaching Groundwater every spring and Soils every other year. Dr. Elliott will teach a course in Watershed Biogeochemistry every spring and a course on Applications of Stable Isotopes in Environmental Systems in alternate years. These courses will not only strengthen the graduate program, but will also allow advanced undergraduates additional elective choices. The arrival of these two dynamic young researchers marks an exciting time for the teaching and research missions of the Department of Geology and Planetary Science.

Announcing Our New G&PS Administrator

The Geology and Planetary Science Department Administrator of 4+ years, Mat Romick, left Geology in late 2007 for another position within the University. Mat was highly successful at keeping the department functioning smoothly and balancing grant budgets during his tenure at G&PS, and he will be missed. However, the department was lucky to identify and hire a strongly qualified new administrator, Lorrie Robbins (formerly from the Environmental and Occupational Health Department of the Graduate School of Public Health), and anticipates no reduction in the pace or quality of departmental operations.

Alumni Updates

John Boulanger (*BS Environmental Geology, 2002*) attended the New Mexico Institute of Mining and Technology in Socorro, NM, where he received a MS in Hydrology in 2004. He writes, "I am currently employed with Kleinfelder (http://www.kleinfelder.com) as a hydrogeologist supporting site characterization and environmental modeling activities for petroleum storage tank release sites, source water/wellhead protection projects and in support of water appropriation permits throughout the U.S. After receiving my MS, my wife and I, who were married in September 2003, returned to Pittsburgh from NM. We are now homeowners in McCandless Township; however, there are no little ones to speak of yet." John had an abstract accepted for presentation at the 2007 International Petroleum Environmental Conference in Houston, Texas.

Dave Boyer (*BS Geology, 2005*) is currently a geologist for Texas Keystone, Inc. He is Secretary and Webmaster for the Pittsburgh Association of Petroleum Geologists, and recently purchased a house in Pittsburgh. He can be contacted at dboyer@texaskeystone.com or sportz_5@hotmail.com.

David K. Brezinski *(PhD 1984)* was honored with the 2007 *John C. Frye Memorial Environmental Geology Award* of the Geological Society of America. This award is given each year to the best environmental geology paper published either by the Geological Society of America or by one of the state geological surveys. Papers published during the preceding three calendar years are eligible. Brezinski was cited for his sole-authored paper "Stratigraphy of the Frederick Valley and its relationship to karst development," *Maryland Geological Survey, Report of Investigation 75*, 101 p. (2004).

Elizabeth Bryant (*MS 2002*) is living in Ventura, California. She can be contacted at embdolphin@hotmail.com.

Stefanie Dilts Bernosky (*BS Geology 2004*) writes, "I received my MS in geology from UNC – Chapel Hill in 2006. As an indirect result of my MS research, I published three abstracts and have a peer-reviewed paper submitted to Gondwana Research. I attended the University of Wisconsin-Madison in pursuit of my PhD, but left in 2007 to begin my career at BP as a geologist. I was married in April 2007 to Mark Bernosky, who attended Pitt (non-G&PS) from 2000-2002. **Erik Hoffmann** *(BS 2002)*, a fellow Pitt geology alumnus (and fellow Wisconsin grad student) was in attendance. We now reside in Houston, TX."

Paula Grgich-Warke (*MS 2003*) writes, "I've been living in the UK since 2003 when I married my British husband, and working in the contaminated land/brownfield remediation sector since that time. I'm currently employed by a multinational engineering firm, Hyder Consulting, Ltd, where I function as a technical liaison with the sales and marketing team. I am involved in exploring all aspects of industrial and commercial engineering projects that have an environmental facet to them. Our office specializes in geoenvironmental and groundwater projects and I am currently working on the site investigations for large parcels of land that are being redeveloped for the 2012 Olympic Games. I'm also involved in an interdisciplinary consortia to examine the effects of climate change on the British Isles. Our extensive coastlands are constantly threatened by climatic changes that enhance erosion, increase flooding and damage economic resources, such as offshore oil reserves and a successful fishing industry. I am also a regular guest lecturer at Plymouth University (the place where the Pilgrims left England!) in contaminated land. I have remained an active caver, and for two years was the honorary secretary of the British Caving Association. I have continued to participate in international caving expeditions to Mexico, and am hoping to go to Croatia soon to explore the most researched karst area in the world. I've also been trained in cave diving and have taken my first tentative steps in that form of exploration." She adds that living in the UK "gives me a unique perspective on geology, and I have had an opportunity to see the first replica of William Smith's original (and the first) geologic map and visited his grave. I've stood on the international date line at Greenwich at midnight, and nearly every day for two years I walked along a portion of the Jurassic Coast World Heritage Site. I live in Devon, so now I have lived in two places with geologic periods named after them!"

Erica Love (center) and her Geology wedding guests

Lara Homsey (*MS 2003*) is an Assistant Professor in the Department of Geosciences, Murray State University, Kentucky. She can be contacted at lara.homsey@murraystate.edu.

Candace Kairies Beatty (*PhD 2003)* is currently an assistant professor at Winona State University, Winona, MN, and a Faculty Fellow with the U.S. Department of Energy/ National Energy Technology Laboratory.

Scott Knoflicek (*BS Geology, 1999*) worked as an environmental consultant in New Jersey, Alaska and Pennsylvania after graduating with his BS in 1999. He writes, "Most recently I decided to pursue my aspirations of teaching and am working toward my master's degree in education from Drexel University. I live in Philadelphia and plan to teach high school earth and space science in the School District of Philadelphia."

Erica Love (*BS Geology, 2001; MS 2003*) tells us "I'm living in Pittsburgh and working as an environmental consultant for Camp, Dresser, and McKee, Inc. for clients across the country. My husband Tony and I are approaching our one-year anniversary, October 14, we can't believe it's been a whole year. Our wedding was a bit of a Pitt Geology alumni party [see photo] and we were so happy that so many of our great Pitt geology family were able to attend. It wouldn't have been the same without you."

Matt Maiers (*BA Environmental Studies, 2005*) writes, "I worked as a Project Manager with Greensburg Environmental Contracting Systems, Inc. in Greensburg, PA, but I recently accepted a position with the Walsh Group in Canonsburg, PA as a Project Engineer. I am married to Michel Pawlosky-Maiers who is an optometrist ,and we live in Greensburg, PA." For those of you who remember better days, Matt was a member of the 2004 Big East Champion and 2005 Fiesta Bowl Pitt football team.

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Alumni Updates

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Matt Maiers and Michel Pawlosky-Maiers

He can be contacted at mattmaiers@yahoo.com.

Dan Nelson (*MS 2005*) is at the University of Washington in Seattle, where he has just started a PhD in chemical oceanography with Dr. Julian Sachs. He is working with hydrogen isotopes in lipid biomarkers. He can be contacted at dbnelson@u.washington.edu.

Erin Nock (*BA Environmental Studies, 2002*) writes, "I am currently living in Missoula, Montana. I work for the United States Forest Service, Northern Region Headquarters, as a GIS Specialist in the Wildlife, Watershed, Fisheries and Rare Plants Unit. I am in my last semester of graduate school at the University of Montana, working toward my master's degree in GIS. After graduation I will continue to build my career working for the Forest Service. I plan to stay in Montana as long as I can....it's so beautiful out here!!

Erin Nock in the Rockies

Aaron O'Hara (*BS Environmental Geology, 2005*) writes, "I work for the PA Department of Environmental Protection, Bureau of Oil and Gas Management; it will be two years in November. There are two sections to the program, the permitting section, which issues permits for oil and gas well drilling, and the compliance section, which takes care of inspections and regulation of oil and gas well activities. I work in the permitting section as a Geologic Specialist and perform the technical review on oil and gas well drilling applications." Aaron lives in Meadville, PA, and can be contacted at aaohara@state.pa.us.

Tim Pierce (*MS 2001*) writes, "I currently live in Austin, Texas, with Lisa (my wife of eight years) and our two children Abigail (3 years) and Henry (6 weeks). I am in my third year selling residential real estate in Austin, and Lisa has continued her career in home mortgage at Wells Fargo. (What a way for two geologists to make a living, eh?!) I meet up with the old Planetary Pitt crew each year at the LPSC conference in Houston (**Jeff Byrnes** [*PhD 2002*], **Scott Mest** [*PhD 2004*], **Jen Piatek** [*PhD 2003*], and others who attended Pitt after I left). This past year I also saw **Joey Mineryini** [*MS 2001*] and **Sherry Stafford** [*MS 1999, PhD 2007*], both of whom are at ExxonMobil in Houston. Lisa and I remember Pittsburgh and my time at Pitt (1999-2001) fondly. I published the results of my MS thesis (slightly modified) with David Crown in 2003." Tim can be contacted at tpierce@cbunited.com.

Jim Pottinger (*MS 1996*) is currently employed at the Gateway School District, Monroeville, PA. He is the Department Chairperson for the AIM Gifted and Talented Program, which is dedicated to teaching the gifted and talented through innovative technologies and methods. He works mostly with students in grades 11-12, and is always in need of guest speakers (contact him at jpottinger@gatewayk12.org if you can help). Jim is married to Mimi Suppes and has two young children: daughter Riley (4) and son Torin (2).

Jim Pottinger and family

Brian Ruskin (*BS Geology, 2001*) completed his PhD in Earth and Atmospheric Sciences at Cornell University in 2006. His research focused on the genesis of nonmarine stratigraphic sequences and utilizing paleosols as climatic indicators in foreland basins in Argentina and Utah. After graduation, Brian began his current job as a regional geologist for a new ventures team at Shell International Exploration and Production, Inc. in Houston, TX. He can be contacted at brian.ruskin@shell.com.

Steve Schatzel (*MS 1990, PhD 2001*) writes, "I am still working at NIOSH in the Pittsburgh area. In response to the tragic accidents occurring in US coal mining industry over the past couple of years, several changes to the way coal is mined are coming and more may follow. These challenges have probably reached all who work in activities related to this industry. My coworkers and I have some new publications coming out in 2008. There will be a NIOSH Information Circular out at the end of this year or early next year. . . Also, my part-time work on sources for respirable silica dust has been documented and will be submitted to the International Journal of Coal Geology shortly. . . . Lastly, we will be presenting and publishing our findings from a field study in scenic southwestern Pennsylvania at the 12th North American/US Mine Ventilation Symposium in Reno. That was a huge field effort for us and documents changing reservoir conditions in longwall panel overburden in response to mining." Steve can be contacted at zia6@cdc.gov.

Arthur C. Tarr (*PhD 1968*) updated us on his professional career subsequent to his doctoral work with Walter Pilant. He writes,"Following a National Research Council post-doc in 1968-1969 with ESSA, Coast and Geodetic Survey (ESSA was the immediate predecessor of what became NOAA in 1969), I was employed as a research geophysicist with the National Earthquake Information Center (NEIC) at NOAA's headquarters in Rockville, MD. In 1972, the NOAA earthquake program

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Alumni Updates

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and personnel were transferred to Boulder, CO, and later merged with the earthquake research programs of the U.S. Geological Survey in 1974. I retired from the USGS in February 2006 but now hold a Scientist Emeritus appointment with the NEIC in Golden, CO. The nearly 38 years of federal service with NOAA and USGS provided me with many exciting research opportunities in observational seismology and plate tectonics. Early in that period, the plate tectonic revolution was in full swing and I was able to use my dissertation work to establish plate effects on body-wave magnitude determinations. I was a member of a team analyzing data from a seismic network in the Aleutian Islands prior to and subsequent to two large underground nuclear explosions, and later I was project leader of new seismic networks in Puerto Rico and South Carolina established to characterize the seismic hazard of those areas. Other project work included seismicity studies in southern Nevada in connection with the Yucca Mountain nuclear waste storage facility, in southern Puget Sound determining seismic amplification due to low-velocity surficial deposits, and analyses of numerous U.S. and international disasters such as the 1994 Northridge and 2004 Sumatra earthquakes. I was intrigued to read the discussion of the geographical information systems (GIS) program in the Department. In 1987 I led a special project to expedite the incorporation of GIS into USGS earthquake research. I established a centralized GIS lab and training program at the Golden offices. As a result, GIS is now integrated into most research programs. My current Scientist Emeritus project is the creation of a large wall map of global earthquakes for the period 1900-2005 and the design of a comprehensive online seismicity atlas of Earth using GIS."

Andrew Vahey (*BA Environmental Studies, 2002*) writes, "After graduating from Pitt in '02 I moved to West Chester, PA, and started working full time for a utility company in Delaware and Maryland where I've become a Senior Environmental Scientist. I graduated from Saint Joseph's University (Philadelphia, PA) in the spring of 2007 with a Master of Science degree in Environmental Management and Public Safety. The REALLY good news is that my fiancée and I got engaged on 10/19/07. We're planning a 2008 wedding in West Chester. My free time is filled with running, working on cars and cheering on the Steelers."

Carey Vallor (*BA Environmental Studies, BS Psychology, 2004*) writes that after graduating ". . . it took me some time to land the job that I really wanted, to work with the Department of Environmental Protection (PA DEP)! I utilized my psychology degree when I first graduated and worked at a child and adolescent psychiatric hospital and kept taking any civil service test that I qualified for. I was hired in October of 2005 at CYS (Children & Youth Services) of Washington County through civil service, which placed me on a promotional list for other state jobs. I was finally hired with the PA DEP in 2006 and recently upgraded my status from an environmental trainee to a full-fledged Waste Management Specialist. I work out of the Pittsburgh office located on Washington's Landing and am under the Waste Program which deals with hazardous, residual and municipal Wastes."

Ann Vander Schrier (*Pro-MS in GIS/RS, 2003*) is the Manager of GIS Systems and Numeric Data Services at Case Western Reserve University's Kelvin Smith Library in Cleveland, Ohio. She recently started on a master's degree in Library and Information Science at Kent State University.

Jessica Wade (*BA Environmental Studies, 2002*) writes, "I am currently employed at DigitalGlobe and coming up to my five-year anniversary in December. My experience earning the GIS certificate at Pitt really helped me in this industry. The GIS certificate program provided me with a background in relevant software such as ENVI and ESRI packages as well as a basic understanding of remote sensing and GIS. I have evolved at DigitalGlobe from a Satellite Imagery Technician to a Satellite Production Systems Engineer. My most recent endeavor has taken me into a position as a Satellite Grounds Systems Software Test Engineer. I truly appreciate my experience at Pitt in the Geology & Planetary Science Department and the journey of mine that it initiated." She notes that DigitalGlobe has successfully launched a second commercial remote sensing satellite, and information and pictures can be found at http://www.spaceflightnow.com/delta/d326/070918launch/.

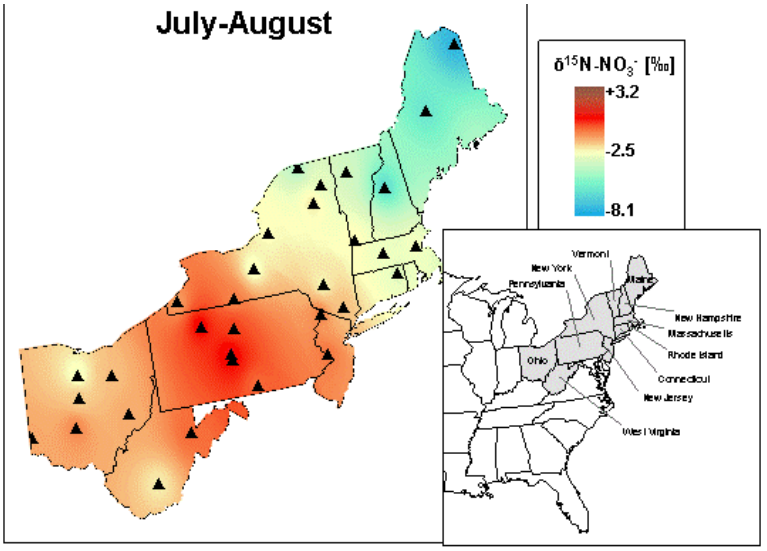
Katherine Walden Schmid (*MS 2005*) writes, "I've gotten married and have changed my name to Katherine Walden Schmid. I work for Equitable Production now and look for oil and gas reserves in northern West Virginia and Pennsylvania." Katherine's work email is kschmid@eqt.com.

Sarah Zimmerman McElfresh (*MS 2000*) writes, "I have spent the last year working on the St. Lawrence University Geology Alumni Conference as one of the co-chairs. We had a very successful conference in September. This is a unique event where alums return to campus to connect with students and let them know the type of things they can do with their BS in geology and fill them in on things they wish they had known as a student. We had about 40 alums return for two days of talks and panels with the students. During the conference I was honored with the William T. Elberty Jr. Medal for service to the University through direct service and support of the Department of Geology. . . . I am also continuing to maintain the web site for the SLU Geology Alumni (http://it.stlawu.edu/~geoclub/alumni/). That is the extent of my geology these days, as I am spending time with my family. Scott and I have two girls — Katie, now 4 and Eliza, almost 2. They keep us pretty busy with school, story time at Phipps, and Kindermusik. As a family, music continues to be a high priority and Scott and I are busy with our community band — the East Winds Symphonic Band. We were just selected to perform at the National Convention of the Association of Concert Bands in Corning NY. It promises to be an exciting time. We also continue to work on an organization that we created with another area musician — the Southwestern Pennsylvania Band Partners. This organization serves to connect regional community bands and to highlight and promote community music in Southwestern PA."

Please use the enclosed postage paid envelope to let us know how you're doing. Plus, we'll include your news in the next newsletter.

Isotope Study Links Nitrates to Power Plants

Recently hired Assistant Professor **Emily Elliott** (see cover story) has completed an unprecedented survey of the isotopic composition of nitrate in rainwater throughout the northeastern U.S. Atmospheric nitrate deposition is a key contributor to acidification of streams and soils, forest decline, coastal water algal blooms, and ozone and particulate matter formation. The results, published in *Environmental Science & Technology* (v. 41, pp. 7661-7667), demonstrate that the isotopic composition of nitrate in precipitation is directly related to contributions from power plants. In fact, her results indicate that nitrogen isotopes may be a better tool than commonly used concentrations of nitrate, sulfate, and pH in precipitation for assessing the source of nitrate in rainwater. Based on these results, Dr. Elliott suggests that isotopic monitoring of precipitation may be an effective way to monitor long-term reductions in power plant NOx pollution, as required by the Clean Air Act and the Clean Air Interstate Rule. Additional data from her study illustrate that monitoring networks need to be expanded to incorporate sites in urban areas, to capture the influence of roadway NOx pollution. As part of building her research program, Dr. Elliott is developing plans to establish a precipitation chemistry monitoring site in Pittsburgh, which will be one of only several urban precipitation monitoring sites nationwide.



Spatial distribution of nitrate isotopes in rain across the northeastern U.S. Higher values (shown in red) indicate the influence of power plant NO_x emissions on nitrate formation. (adapted from Elliott et al., 2007).

Reflection Seismology Program Initiated

Associate Professor **Bill Harbert**, working with researchers at the Department of Energy/National Energy Technology Laboratory (NETL) in Pittsburgh, has initiated a seismic reflection study to investigate the effectiveness of CO_2 injection as a means of carbon sequestration and enhanced oil production. Professor Harbert was awarded grants totaling nearly $1.4 million from NETL during the past year, in addition to an earlier donation of a seismic truck from WesternGeco worth an additional ~$1 million.

The WesternGECO-donated F700 seismic recording truck allows recording of up to 3,000 channels of 24-bit digital data simultaneously.

In this project, reflection seismic methods will be used to image CO_2 migration at an injection site before and at six-month intervals following injection. Working with the Southwest Regional Partnership on Carbon Sequestration, Professor Harbert and his team will construct geodatabases related to risk assessment of CO_2 sequestration. Rock core materials from previously interpreted oil field wells will be tested in the NETL core flow laboratory to determine acoustic velocities. The lab study will employ enhanced hardware and software for measuring acoustic velocities at *in situ* pressures and temperatures typical of sequestration conditions. These measurements will then be correlated with the seismic reflection survey, providing a direct bridge between the geological units and their representation in the collected reflection seismic datasets. Continued work will add subsurface, reflection seismic, well lithology, wire line log, and other information to the database.

So far, this project has helped support PhD student **Vladislav Kaminski**, former PhD student (and now postdoc), **Brian Lipinski**, and early-career PhD student **Chris Purcell**.

Faculty Updates

Mark Abbott

Field-based research continued this year in remote parts of the Peruvian and Venezuelan Andes and the Pacific Northwest. Fieldwork focused on collecting sediment cores to study late Quaternary climate change. The research group includes three PhD students (**Nathan Stansell,**

Broxton Bird and **Byron Steinman**) and seven undergraduate research assistants. **Lindsey Witthaus**, one of the undergraduate researchers who conducted fieldwork in the Yukon and wrote an honors college thesis, also received a Fulbright scholarship to study in Brazil this year. The goal of our research is to document drought and temperature histories since the last ice age using finely layered lake sediments. Methods include stable isotope geochemistry, physical sedimentology, and geochemistry. Results of stable isotope analysis of the sediment record for the last 100 or so years is calibrated using instrumental climate data from nearby meteorological stations and then extended back in time using the geological archives.

Thomas Anderson

Following the publication of ideas about very large faults in southwestern North America, Brian Mahoney (U. Wisconsin, Eau Claire) and I published an extended abstract in which we supported the speculation that similar faulting may extend to Alaska! Lots of fun. Still working upon refinements that further support this idea. In the meantime projects in Nevada, New Mexico, Pennsylvania and Puerto Rico progressed. **Patti Campbell**, a former student, now a professor at Slippery Rock, her students and I are finishing up work in the East Potrillo Mountains of southern New Mexico. In Nevada, **Damian Piaschyk** completed his thesis focused upon a large transpressional bend of the Las Vegas Valley shear zone. **Sarah Morealli** has just started a new project to the west, among highly extended rocks. **Mary McGuire** is tackling the relation between iron-ore deposits and fractures in southern PA. **Daniel Lao-Davila** is back from Australia and writing his dissertation about deformed ultramafic rocks in southwest Puerto Rico. I have returned from a Penrose Conference in Greece where I gained insights into

plate coupling and core complexes. I plan to incorporate the new knowledge into a paper about extension in northwestern North America with Bert Struik and Jim Ryan of the Canadian Geological Survey. I continue to teach the introductory geology labs each semester. I enjoy the interactions with undergrads just entering the geological and environmental studies very much. I also taught structure and had a stimulating introduction to the western Pacific in the graduate plate tectonics course.

Daniel Bain

I'm very pleased to be joining the Geology and Planetary Science faculty at Pitt. While it's only been a few short months, things are going well. Lab renovations are scheduled to be completed soon. I've had the pleasure of working with several Pitt undergrads, including **Emily Broich, Amar**

Mehta, Michael Muder, and **Marion Sikora**, in conducting research on urban streams in Baltimore, MD and in Pittsburgh's own Nine Mile Run. (If you haven't been to Frick Park in the last three years, I highly recommend it. You won't believe what they've done with the place.) This year I hope to continue and expand my research program in urban fluvial systems, non-traditional stable isotope geochemistry, and catchment hydrology, including students drawn from both Pitt's very capable undergraduate population and a grad student or two from this year's recruitment class (If you know someone…).

I taught a graduate course in Soils this fall, and will teach this course in alternating fall semesters. The field component of this class is characterizing soils and mass wasting in Schenley Park in cooperation with the Pittsburgh Parks Conservancy. This work is in support of their long-term goal of restoring Panther Hollow Creek and Lake. Things have been fun so far. This spring I taught Groundwater, something that will happen every spring, come hell or high water.

In addition, Dr. Elliott and I have been repeatedly enchanted with Pittsburgh. Moving from (most recently) the San Francisco area, I have to say San Fran topography is overhyped. Pittsburgh has plenty, and more importantly, snow. And Pittsburgh has affordable housing. And the Steelers. And *the* friendliest people. Let's stop there. I think I'm embarrassing the city.

Rosemary Capo

Doctoral student **Liz Chapman** and new PhD student **Tonya Brubaker** are working on a collaborative DOE-NETL project with WVU that involves the use of mass spectrometry techniques to identify, quantify and determine the mechanisms of interactions of trace elements in coal utilization byproducts (e.g., fly ash) with natural waters. We're also continuing to explore the chemical and mineralogical characteristics of coal mine drainage iron oxides, which was the subject of former PhD student **Candace Kairies Beatty** (now Assistant Professor of Geoscience at Winona State Univ.). **Liz Chapman** and undergraduates **Allie Ackerman** and **Andrea Glassmire** are working on a new project, in collaboration with adjunct faculty member Bob Hedin and

Hoover Color, Inc., which recently received funding from the Green Building Alliance. The goal is to find ways to optimize the recycling of iron oxides deposited in passive wetland

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Faculty Updates

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treatment systems. Liz, working with former MS student **Ted Weaver** (now a Project Geologist with Hedin Environmental), has also been examining evidence that shallow coal mine discharges rather than deep oil and gas brines are responsible for iron-contaminated waters seeping from some gas wells in Clarion County. Liz presented preliminary results at GSA and is extending this work with the help of grad student Graeme Dodworth. Recent PhD graduate **Sherry Stafford** (now a research geologist at ExxonMobil in Houston) was a coauthor on a related paper. On a more exotic topic, Sherry also has two revised journal manuscripts related to her dissertation work on Archean fossil soils in Finland and Canada near submission. Undergraduate **James Gardiner** is finishing up work on a geoarcheology project related to horse domestication in the Eurasian steppes begun in collaboration with Mike Rosenmeier and Sandra Olsen from the Carnegie Museum of Natural History; James will enter our graduate program in the fall. In teaching-related news, Environmental Studies program coordinator Mark Collins and I have begun work on a Heinz Foundations-supported project that integrates sustainability issues into undergraduate classes. Last spring Brian Stewart and I took our graduate seminar class out on a field trip to the Owens Valley region in California; eighth-grader Emma Capo Stewart showed her four-year-old brother, Owen, the ropes.

Mark Collins

It's been another interesting year for the Environmental Studies Program. The ES major boasts 75 majors and roughly 250 graduates; in ten short years, the program has become one of the premier multidisciplinary majors in the University, with half a dozen Morris Udall and Harry Truman Scholarship winners and runners-up. This year, 30 ES students worked in wide-ranging internships spanning five states; another 11 students

studied abroad in China, Costa Rica, France, Spain, Australia and Peru. Four of our students earned Brackenridge Summer Research Scholarships, and 17 students—an unprecedented number—worked in research labs throughout the department.

Despite the complex nature of the major, our students continue to do well academically. Of 12 students graduating in April 2007, eight graduated with honors (three cum laude, three magna cum laude, two summa cum laude); the overall GPA for the entire major was above 3.1. This spring, four Environmental Studies students graduated Phi Beta Kappa.

On a personal note, it has been enormously gratifying to hear from so many alums. Although I am not always able to respond immediately to emails and letters, please know such correspondence is very much welcomed. Take advantage of the response card in this newsletter and let us know how you're doing.

Finally, the department would grind to a miserable end if it weren't for the hard work of Lorrie Robbins, Mat Romick, Brian Stewart, Deanna Hitchcock and Dolly Chavez. I am grateful for both their skills and their patience.

Emily Elliott

It's hard to believe we've been in Pittsburgh now for nearly one year. As time flies by, progress continues to be made in establishing our new research labs and programs. Lab renovations are soon to be underway and are scheduled to be completed in 2008. A new Isoprime continuous flow mass spectrometer is scheduled to be delivered this fall and will soon be keeping Dr. Rosenmeier's instrument company in SRCC 520-521. When all is said and done, we should have some really nice working space to accommodate our research for the coming years.

In addition, I'm fortunate to be advising two stellar MS candidates, **Katie Middlecamp** and **Marion Sikora**, both of whom

started their programs this fall. Katie's research focuses on using carbon and nitrogen isotopes to assess uptake of fossil-fuel derived CO_2 and NO_x to vegetation. Her work is being conducted in conjunction with folks at the Baltimore Ecosystem Study — a Long-Term Ecological Research Site. Marion Sikora is embarking on an isotopic and geochemical survey of water quality impairment in Nine Mile Run, a highly visible restored stream in Frick Park. Marion will be using a combination of nitrate isotopes and geochemical tracers to improve our understanding of contamination sources to Nine Mile Run and how they vary with discharge, especially during wet weather. This work is being conducted in collaboration with Dr. Bain and the Nine Mile Run Watershed Association. In the coming months, I look forward to assuming teaching responsibilities, including a course this spring that will focus on the hydrology, biogeochemistry, and management of watersheds that will incorporate field work at the U.S. Forest Service Fernow Experimental Forest in Parsons, West Virginia.

It's certainly been an exciting year for us, and I'm looking forward to sharing my research interests, teaching, and the isotope gospel with anyone who will listen.

William Harbert

Sean Fulton and **Jeff Mihalik** have been successful and received their Master of Science in the Sloan Foundation Professional Masters program! They have done a great job. **Brian Lipinski** received his PhD degree and is now a post-doctoral researcher at the University of Pittsburgh and National Energy Technology Laboratory of the United States Department of Energy. **Vladislav Kaminski** should be finished this term with his PhD degree and has begun looking for employment in Can-

ada. New students **Chris Purcell** and **Amanda Wasielewski** have just started this term. (continued on page 9)

Faculty Updates

(continued from page 8)

I have been working on research in collaboration with the National Energy Technology Laboratory in the areas of reflection seismic, rock physics and risk assessment. This year I spent a pleasant two weeks in Moscow and London as part of a sabbatical, completed two continuing education courses (in 3D seismic acquisition design and AVO applied to lithology determination) and have been working with colleagues and students. I am very grateful for the continued donations for software and equipment relevant to CO_2 sequestration and geophysical studies. Students have become much better than I am at utilizing the Kingdom Suite of Seismic Micro Technologies and interpreting 3D seismic data sets.

Charles Jones

I really enjoy teaching historical geology. In recent years I've shifted my emphasis toward the practical, hands-on interpretation of rocks, stratigraphic columns, cross-sections and maps. I figure these skills will best serve students as they move into professions requiring the unraveling of the regional geology of an area. I only wish that it were feasible to do more than one weekend trip in the spring semester. Finals week is upon us just as the weather gets nice!

I am currently writing a first draft of a lab manual for historical geology that is more challenging and I hope useful than traditional manuals. I am hoping that these labs will be a good preparation for jobs in especially the petroleum industry. However, since I have not personally worked in industry, I would appreciate hearing about potential lab topics that you wish you or your employees had been exposed to before coming to work. Perhaps you have a set of well logs or seismic sections that could be donated to be used as the core of a lab in either historical geology or sedimentology/stratigraphy? Or perhaps a great example illustrating the use of biostratigraphy or lithostratigraphy to address an important geologic question?

On other matters, I get a lot of people bringing in samples that enter my office as valuable

meteorites and leave as hunks of slag or industrial metal. Bill Cassidy's been training me. It is always tough letting them down. One guy carried his 50-lb block of metal from base to base for the full 20 years of his Air Force career! This is the hazard of free shipping. But at least he was philosophical about his non-meteorite: He dumped it in my office. Another guy with a piece of chert was sure I was wrong, that Bill Cassidy was wrong, and that the Carnegie Museum of Natural History was wrong. I think he eventually turned his worthless piece of chert into a valuable meteorite using nothing but the power of his mind. Uri Geller would have been impressed!

If you graduated since I arrived at Pitt, you may be interested to know that my oldest daughter is now seven and the younger identical twin clone daughters are four. I am getting a lot more sleep compared to a few years ago. The basement is finished. A massive swing set complex has been erected (why use 8-foot 4x4s when they come in 16-foot lengths?) The twins especially love princesses. The eldest especially loves to draw dragons incinerating princesses. You can imagine the wailing and gnashing of teeth that ensue. But at least I sleep at night!

If you are ever in the neighborhood, I hope you'll stop by! I'd like to hear about what you are up to, and to see if you have any suggestions about improving what we do here.

Michael Ramsey

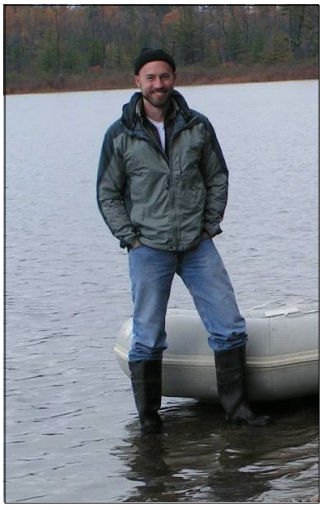
For all of 2007 I have been away from the Department on my sabbatical leave. I was awarded tenure in the spring of 2006 and started my sabbatical in January 2007.

Unlike most sabbaticals where one goes to a single location, I opted for the more costly and time-intensive option of relocating three times! For the first four months of the year I went back to work with my PhD

advisor (Dr. Phil Christensen) at Arizona State University. The focus of my time was new research involving Mars. In 2006, I was named as a participating scientist on the Thermal Emission Imaging System (THEMIS), which is currently collecting orbital infrared data of the Red Planet. I am looking at new ways to improve the data to detect smaller surface features including possible hot spots. I relocated to Anchorage, AK, in early May, where I spent the next four months working with the Alaska Volcano Observatory. My time there continued a decade-long collaboration researching new ways to better monitor volcanoes in the northern Pacific region. Over the past five years, this work has focused on using data from the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) satellite instrument. During the summer, I was awarded NASA funding for another three years to continue as a science team member on that mission. And finally, for the remainder of 2007, I headed to the University of Hawaii in Honolulu. My research time there was spent working with Mars data as well as looking at active volcanic processes at Kilauea Volcano. Being away from Pittsburgh has not slowed my research group at all. My seventh PhD student, **Emily Mercurio**, just started and several papers were published this year, all first-authored by my students. I am looking forward to a productive year of research and teaching!

Michael Rosenmeier

Greetings! It's hard to believe, but I'm now settling into my fifth year at the University of Pittsburgh…and this last year has been particularly busy and productive. Under



(continued on page 10)

Faculty Updates

(continued from page 9)
graduate research advisees **Marion Sikora** (now a MS student in the department) and **Sarah Strano** completed their senior thesis projects over the summer. Their hard work will culminate in a series of manuscripts (to be submitted this fall for peer review) focused on climate changes within Central Asia over the last ~5,000 years. Graduate student **Kevin Robinson** also successfully defended his master's thesis this year. Kevin's research, now in press, was aimed at reconstructing the environmental history of northern Mongolia using lake sediment cores. PhD student **Benjamin Cavallari** also continues to make progress on a National Science Foundation-funded project in northern Greece, and we hope to publish the first results from this work in the coming months.

Fieldwork has also kept me busy over the last year. August 2006 was spent in the Burgundy region of France, with PhD student **Tamara Misner**, undergraduate **Sarah Strano**, geomorphologist Dr. Eric Straffin (Edinboro University of Pennsylvania) and archaeologist and ethnographer Carole Crumley from the University of North Carolina at Chapel Hill. We spent several weeks collecting sediment cores from medieval-aged reservoirs, as part of an interdisciplinary research project examining the direct cause-and-effect relationships between historic land use changes and long-term watershed dynamics. Of course this study also provides a unique opportunity to sample the fine wines and cheeses of Burgundy! On a less remarkable gastronomic note, **Kevin Robinson** and undergraduate **Erin Stacy** joined me for nearly five weeks of fieldwork in southeastern Kazakhstan in July of last year. This research, collaborative with archaeologist Michael Frachetti (Washington University in St. Louis) is focused on human-environment interactions in the steppes of Central Asia and the possible influence of climate change on the evolution of nomadic pastoralism within the region. During the field campaign, we recovered sediment cores from multiple lake basins in the desert steppe south of Lake Balkash and explored several high-elevation lake sites within the Dzhungar Mountains. We also collected numerous water samples, as well as soils, grasses, and modern and fossil horse teeth for oxygen and carbon isotopic analyses.

In other news…I continue to manage and maintain the dedicated stable isotope laboratory facilities within the department. Over the last year, between electronic box soldering efforts and cryogenic system replacements, we managed to complete over 6,000 analyses! And we're now making preparations for the arrival of a second mass spectrometer, an addition tied to the hiring of Dr. Emily Elliott. So, it looks as if the upcoming academic year promises to be equally busy and, hopefully, even more productive!

Until next year… "be well, do good work, and keep in touch."

Ian Skilling

I currently have two master's students, **Kristen LaMoreaux** and **Elizabeth Simoneau,** and

one PhD student, **Jeff Hungerford**. Kristen and Jeff are both working on a long-lived volcanic complex in northern British Columbia, namely Mount Edziza, to understand the interaction of volcanism and confining ice over the last 2Ma.

Kristen has been studying trachytic lava flows and domes erupted under ice about 1Ma ago, and Jeff had been focusing on basaltic lava flows emplaced beneath ice. The focus of both of their projects is to develop methods of using these rocks to infer the presence and thickness of former ice. We had a successful (and last) field season at Edziza this summer. Jeff also plans to study sub-ice basaltic lavas in Iceland next summer. I was also an organizer for the 2nd Volcano-Ice Interaction on Earth and Mars conference, held in Vancouver, Canada in June 2007. Both myself and Jeff presented talks at the conference.
Elizabeth has just begun a project studying the textural changes during the transition from Surtseyan ("wet") to Strombolian ("dry") deposits at tuff cones or rings. She visited her field area of Koko Crater in Hawaii in early January 2008. The focus of her research will be to try to constrain the controls on such transitions.

Brian Stewart

I have been very fortunate to have a talented group of students working on a number of different (but always interesting) research projects. **Lev Spivak-Birndorf** completed his master's in August 2007 on the interaction of water with coal utilization byproducts (fly ash) using boron and strontium isotopes, working in conjunction with Dr. Capo's graduate students **Liz Chapman** and **Tonya Brubaker**. He will be writing up his results for publication as he begins in the PhD program at Arizona State University. Doctoral student **Amy Wolfe** has been working diligently to isolate pyrite from different sedimentary rock types so that she can continue her iron isotope studies on pyrite formation and dissolution. She had a paper published

in *Geochemical Transactions*, and she is coauthor (along with me and Dr. Capo) on several papers submitted by our colleagues at Carnegie Mellon who are carrying out pyrite dissolution experiments. Undergraduate **Justin Hynicka** completed an exquisite set of leaching experiments on soils from the Atacama Desert, Chile, which is the driest desert on Earth outside of Antarctica. He has been investigating the origin of unique salt deposits using strontium isotopes as a tracer for different sources, and he presented his work in an invited talk at the 2006 GSA Annual Meeting in Philadelphia. This project is collaborative with researchers at U.C. Berkeley.

Although my teaching load is reduced as Department Chair, I continue to have the pleasure of teaching Mineralogy (GEOL 1001), and I am impressed, as always, by the ever-increasing talent and dedication of our undergraduates. I was also fortunate to be able to participate in a 2007 Spring Break field trip to Owens Valley, California, which was part of a graduate seminar taught by Dr. Capo. We expect more trips to follow as we further develop our research programs in that part of the world.

Emeritus Faculty Updates

Michael Bikerman
Last year I taught what likely will be my last formal class at Duquesne University with graduate student **Ben Cavallari**, who has taken over the class completely. However I am still teaching occasionally as an "edutainment" lecturer on cruise ships where I share my interest and love of geology with adults. So far I have done this on an Alaskan cruise and on a transatlantic crossing ending in Spain. In addition, I was on a ship bound for the Panama Canal

on a cruise which was cancelled as the ship had scraped bottom prior to docking in Acapulco where we boarded. That was quite an experience as the company had to send some 2,000 people home in a few days. We ended up with a few extra days in Mexico in February, which was not all that bad! Other travels have been to Puerto Vallarta, Mexico, to spend some time with my wife's family and to Italy on a land trip to see some fascinating historical, and incidentally geological, sites such as Pompeii, Herculaneum, Mt. Vesuvius, Florence, Lucca, Pisa and Rome.

Otherwise I am still engaged in mining geology working with my son on gold operations in Canada and copper in Arizona, making use of my Pennsylvania Professional Geologist [PG] registration. For students preparing for consulting work, the PG is essential and earning it requires a test after a few years of practical experience — so save your textbooks! When home I follow the old saying — buy a house and make home maintenance your hobby, though mostly I try to keep the garden from becoming a complete wasteland. The deer eat anything Viola plants, but none of the weeds! Power walking and swimming keep some of the fat off and allow me to feel OK.

I hope to see some of you at the Pittsburgh Geological Society meetings — student dinner for $5 and usually a good lecture.

William Cassidy
I got a late start for my project in Argentina this year, so I got here just when everyone is expecting the warm weather (late Spring in the southern hemisphere) -- and "warm" here is equal to hot as hell in Pittsburgh, so it won't be easy. I'll be excavating a couple more craters in the Campo del Cielo meteorite craterfield -- that is, I'll be hiring the pickers and shovelers who will be doing the excavating. This is part of a long-term strategy to get structural data on small impact craters that can then be modeled by hypervelocity impact people under known conditions of velocity, mass, etc., and can also be modeled theoretically by people who love to do that sort of thing. The aim is to reach convergence between field, experimental, and theoretical data that help us to interpret impact cratering effects on other planets, where we can never study impacts in detail.

Harold "Bud" Rollins
Jude and I have been moderately busy over the last couple years, splitting our time between upstate New York and west central Florida. Geologically, the annual sojourn between our two places keeps us in close proximity to the rich fossil-bearing strata of New York's Devonian and the wonders of two coastal plains (in Florida, we are slightly more than three hours away from St. Catherines Island, Georgia, only 11 miles from the Gulf). I have kept my hat in the research ring, co-editing a guidebook for the 2007 Southeastern GSA St. Catherines Island field trip, co-authoring a sea level presentation at the same meeting and presenting a U.S. embassy-supported invited paper at an international meeting in Venezuela, dealing with the Census of Marine Life, Early Human Impact on Marine Mollusks. The latter is in press, to be published in a special volume of British Archaeological Research. In addition, I have several papers in press, included in a huge edited American Museum of Natural History Bulletin titled "Native Landscapes of St. Catherines Island," also due out by the end of the year. And, I have finally completed a book manuscript dealing with "Nature's Proxies and the Global Problematique." I started work on that book long ago with help and encouragement from Jude, Mark Collins and Ed McCord, and over the last year it has taken me on some fascinating "excursions" into evolutionary biology, neural physiology, religion, and politics. I hope that you have had a busy and productive year. Jude and I would love to hear from you and catch up on the last few years (email: haroldrollins@lycos.com).

Walter Pilant
When I retired in 1996, it was my first retirement. I managed, at a somewhat reduced level, to continue my work in Appalachian structural geology aided by my trusty magnetometer and a few helpful students. Found a few more interesting results but was unable to get together the big picture in the vicinity of Harpers Ferry, WV. I kept on teaching the "Planet Earth" course for the next ten years. In 2006 (my 75th birthday) I decided to "really" retire. Bryan, Texas, offered many nice advantages for a "real" retirement. My son is a professor (of Mathematics) at nearby Texas A&M, the housing is even less expensive than in Pittsburgh, the houses are one-story (remember our last Pgh house was three stories with a full basement), the lots are "flat," and the weather is warm (too warm, some would say).

My days here are quite relaxed: keeping up with family and friends (thanks to e-mail), keeping up with science and politics (thanks to the web) and seeing a lot of movies and British detective series (thanks to NetFlix).

Bruce Hapke
Even though I retired, I continue to be active in research, focusing on trying to understand the interaction of electromagnetic waves with planetary regoliths in support of spacecraft observations of bodies of the solar system. In October I presented a paper at the annual meeting of the Division for Planetary Scientists of the American Astronomical Society that solved a nagging problem in the reflection of light by powders and soils: that the reflectance increases as the soil becomes more compressed. This turns out to be due to the fact that present reflectance models didn't take the fact that particles cannot interpenetrate one another into account. Adding this requirement mathematically solved the problem. I also continue to cooperate with former graduate student and current senior scientist at the Jet Propulsion Laboratory **Bob Nelson** on studies of Saturn's rings. In September I had a pleasant lesson in field geology when my wife and I took a cruise up the Columbia River on a sternwheeler river boat for a week.

Students in the field — research and field trips!

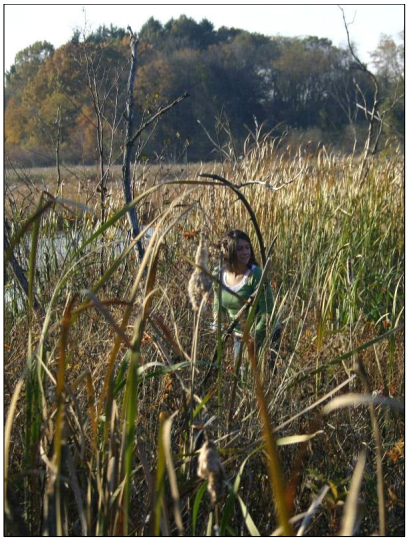
Maya Hunt discovers a clast dislodged from fertiary conglomerates in south-western Wyoming. She was part of a summer class investigating the geology and paleontology (including dinosaur bones) on the Cook Ranch.

Dr. Stewart's students at Pine Creek in the Sierra Nevada Mountains, analyzing stream water chemistry to compare with the chemistry of the Owens Lake playa.

Students in Dr. Rosenmeier's limnology course at Triangle Lake Bog (Ohio) during a weekend field trip.

Erin Stacy, currently an undergraduate in the Environmental Studies Program, and Kevin Robinson (MS, Geology, 2007) filtering water samples from the Koksu River in southeastern Kazakhstan.

Dr. Rosenmeier explaining the mechanics of a water-quality meter to geology undergraduate majors Carrie Stem and Abbie Sigmon (left and center) and graduate student Tamara Misner (right).



Environmental Studies major Danielle Mullen collecting water samples at Jackson Bog, Ohio, during a weekend field trip with Dr. Rosenmeier's limnology course.

Katie Middlecamp, Amar Mehta, Dan Bain, Emily Elliott, and Marion Sikora visit Baltimore's Inner Harbor following the 2007 Baltimore Ecosystem Study Annual Meeting.

Historical geology class enjoying the Tuscarora Formation near Loysburg, PA.

G&PS students and faculty prepare themselves for sampling sulfurous spring deposits in California's Owens Lake during a Spring Break field excursion.

Undergraduates Justin Hynicka and James Gardiner scale weathered granite in the Alabama Hills, eastern California.

Graduate student Sarah Morealli collecting a bedding orientation of a Paleozoic quartzite near Death Valley, Nevada.

Students from 2007 Yellowstone Field Course atop the Cathedral Cliffs in northwest Wyoming.

Undergraduate Awards and Honors

Fulbright Scholars

We are proud to announce that this past year two of our undergraduates received prestigious Fulbright Student Fellowships to do research abroad. **Lindsey Witthaus** *(BA Environmental Studies 2007)* won a fellowship to conduct a baseline study of the impact of bauxite mining on a rural community in Minas Gerais, Brazil. **Sarah Strano** *(BS Geology 2007)* is conducting a 10-month research project focused on land-use and climate changes within the Arroux Valley in Burgundy, France. **Kevin Robinson** *(Geology BS 2004, MS 2007)* was the first Pitt undergraduate ever to win a Fulbright research award, so our undergraduates are forging an exceptional record of achievement!

Geology Field Camp and Summer Field Studies

Emily Broich, a junior Environmental Studies major from Lancaster Country, PA, won a $2,000 summer-study scholarship from the **Garden Club of America**. The scholarship—designed "to encourage studies and careers in the environmental field"—will go toward Ms. Broich's field work in South America. Her research will focus on the environmental impact of the textile industry in southern Peru. This is the second time an Environmental Studies major has won a GCA scholarship. Senior **Megan Sharretts** of Danville, PA, won the award in 2005.

Norman K. and Margaret Flint Field Scholarship

Norm Flint was famous for his field trips and teaching, and it is therefore especially appropriate that the **Norman K. and Margaret Flint Memorial Field Scholarships** give money to help support geology majors when they go to summer field camp. No doubt, many of you look back on your summer field camp with exceptional fondness and with a strong appreciation of the academic value of the experience. We would like to be able to offer more support to our majors, so please consider contributing to this fund.

The 2007 Flint Scholarship winners include: **Bryan Friedrichs** (Peru), **Justin Hynicka** (University of Oregon field camp), **Joshua Riesthmiller** (Lehigh University field camp), **Marion Sikora** (Louisiana State field camp), **Thomas Stranko** (University of Buffalo field camp), and **Sarah Strano** (University of Buffalo field camp).

Environmental Studies Field Experience/Study Abroad Scholarship

Summer field experiences for Environmental Studies majors are supported by the Heinz Endowment. This fund allowed us to give substantial support to each of the following deserving students in 2007: **Emily Broich** (Peru), **Ann Cassidy** (Pittsburgh), **Amber Hanna** (UM's Alaska Camp), **Theresa Romanosky** (Yellowstone Field Study), and **Marion Sikora** (LSU geology summer field camp in Colorado Springs). We are very pleased to be able to help our students see the world.

Geology Club and Sigma Gamma Epsilon

Abby Lewis, Geology undergraduate

The Geology Club has been quite active this year with membership increasing to 25 students. The club went on field trips to Ohiopyle, Linn Run, and Laurel Summit State Parks in the Laurel Highlands of Western Pennsylvania. In the Laurel Highlands the group investigated the Devonian age Venango Group and discussed ways to recognize sedimentary structures, tectonic structures, minerals, and fossils in the field. The club also organizes a carpool to the monthly Pittsburgh Geological Society meetings. The club recently made available Geology Department t-shirts for undergraduates, graduates, and faculty. Ongoing social events include an undergraduate social where students gather in the petrology lab to enjoy pizza and geology movies. The current president of the Geology Club is Abby Lewis and the business manager is Konstantin Ginzburg.

This is SGE's first semester of new initiates and meeting after several semesters of inactivity. SGE holds their meetings with the Geology Club and has seven members including Luke Fidler, Katelin Fisher, Konstantin Ginzburg, Melissa Hill, Dave Kurimsky, Abby Lewis and Sean Polun.

Sarah Strano at work in the stable isotope laboratory facilities maintained by Dr. Rosenmeier.

Ah, the endless structure labs! Here Alan Mur and Katelin Fisher debate the finer points of structural geology in our Undergraduate Resource Room for use outside of normal classroom times.

GPS Graduate Students Around the World

Europe

Left: Tamara Misner (PhD student), assisted by Eric Straffin (University of Edinboro PA), digs a well to observe shallow groundwater near the Château de Lucenier, Burgundy, France. Center: Sarah Strano (BS 2007), Tamara Misner and Michael Rosenmeier collect a sediment core from the moat surrounding the 15th century chateau, currently occupied by the Marquis de Montmorillon.

North America

Broxton Bird (PhD candidate) at Summit Lake in the central Brooks Range of Alaska during July 2006, preparing to collect varved lake sediments from proglacial Blue Lake.

South America

Nathan Stansell (PhD candidate) and team on their way to collect proglacial lake sediments in the Peruvian Andes.

Graduate Student Honors

National and University Graduate Fellowships:

Stephen P. Scheidt — NASA Earth System Science Graduate Student Fellowship
Amy L. Wolfe — Andrew Mellon Pre-doctoral Fellowship
Adam J. Carter — Andrew Mellon Pre-doctoral Fellowship
Benjamin Cavallari — Samuel T. Owens Jr. Fellowship

National and Departmental Competitive Research Grants:

Kevin D. Robinson — 2007 GSA Student Research Grant (Kevin received an "Outstanding Mention" for the quality of his proposal)
Adam J. Carter — Henry Leighton Memorial Scholarship
Nathan A. Stansell — Henry Leighton Memorial Scholarship
Kevin D. Robinson — Henry Leighton Memorial Scholarship

Excellence in Presentation of Research:

Adam J. Carter — 2007 Pitt Grad Expo Outstanding Paper
Vladislav Kaminiski — 2007 Pittsburgh Geological Society Student Night Research Paper Presentation (granted by American Society of Civil Engineers)

Asia

Left: Shellie Rose and Adam Carter (PhD candidates) in front of five-star accommodations on the Kamchatka Peninsula during their Summer 2007 study of Bezymianny and Klyuchevskoy volcanoes. Right: Adam stands in front of the helicopter used for aerial observation.

Thanks to all who contribute to the Henry Leighton Memorial Scholarship Fund. Your generous support helps make possible the dynamic research our students pursue. The research shown on this page from Asia and South America is supported by Leighton funds. To find out more about supporting the Leighton Fund, please see page 17.

Recent Graduates

August 2006— April 2007 Graduates
Environmental Studies
Bachelor of Arts

Sandra Borbonus
Tonya Brubaker
Carla Burkett
Trevor Conlow
Thomas Galligan
Gina Gelotti
Kyle Helal
Patrick Hilko
Christina Kittredge
Patrick Kiprotich
Megan Landfried
Luke Leiden
Jacob Levine
Caroline Matys
Grant Melville
Liana Montes
Andrew Patari
Mary Pfahler
Andrea Proie
Nathan Sharpless
Lucas Slezak
Lauren Stanko
John Vroom

Environmental Geology and Geology
Bachelor of Science

Gina Gelotti
Nerissa Lindenfelser
Nicholas Mongelluzzo
Michael Moreland
Akilah Prout
Kevin Reath
Thomas Stranko, Jr.
Elizabeth Wierdak

Master of Science Graduates

Colin Cooke (08/06)
Lake Sediment Archives of Atmospheric Pollution from the Peruvian and Bolivian Andes

Damian Piaschyk (08/07)
Detachment Faults Between the Specter Range and Southern Spring Mountains: A Transpressional Fault Zone Along the Las Vegas Valley Shear Zone, Southeastern Nevada

Lev Spivak-Birndorf (08/07)
Sequential Leaching of Coal Utilization By-products: Geochemistry and Strontium Isotope Systematics

Kevin Robinson (08/07)
A Holistic Paleolimnological Study of North-Central Mongolian Lakes

PhD Graduates

Brian Lipinski (04/07)
Integrating Geophysics and Geochemistry to Evaluate Coalbed Natural Gas Produced Water Disposal, Powder River Basin, Wyoming

Sherry Stafford (08/07)
Precambrian Paleosols as Indicators of Paleoenvironments on the Early Earth

Pro-MS Graduates

Emmett Rafferty (04/07)
R. Sean Fulton (04/07)

Geology 2007 graduation reception

Thank you for your generous contributions!

Contributions from our alumni are vital to the Department of Geology & Planetary Science. The individuals listed below have provided generous support during fiscal year 2007. If your name is missing and you know you gave money last year, please accept our apology and let us know. We want to be sure to recognize you next year.

Anthracite Level *(up to $10,000)*

Thomas W. Angerman *
ExxonMobil Foundation *
Geo-Mechanics, Inc.

Bituminous Level *(up to $1,000)*

American Geosciences, Inc
Marshall Curtis Carothers, PhD *
Clare Tate Carothers *
Francesco Vincenzo Corona *
George F. Dellagiarino *
William Clyde Heilman III *
Stuart Hirsch
J. Frederick Sarg *
James Edward Werner *

Lignite Level *(up to $100)*

John Robert Anderson II, PhD *
Richard Munroe Busch, PhD *
Hugh Holt Doney *
Mary H. Flint *
Peter F. Flint *
Susan M. Flint *
Mary Garrow-Splittberger *
Donald William Groff, PhD *
Mary E. Groff *
Gertrude C. Gebhardt
Bruce W. Hapke *
Joyce Z. Hapke *
William Webb Johnson *
Christopher Matthew Kern *
Edward Albert Klammer *
Richard Clinton Kilpatrick II
Clifford Allan McCartney *
Clifford McKee
Karen S. McKee
Michael Metlay
Sarah H. Millspaugh
Gregory Michael Molinda *
Phyllis Burger Myers *
Robert M. Nelson, PhD *
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**** A special thanks to our continuing donors***

The Spectroscopy Society of Pittsburgh (SSP) donated $15,000 from the SSP President's Fund to endow an annual seminar focused upon spectroscopy. Past president Dean Tzeng (PhD, 1976), who arranged the donation, directed that undergraduate students identify and host the speakers. We appreciate the generosity and look forward to years of exciting presentations resulting from this gift.

Why donate?

Last year we were able to provide **ten** grants averaging *$900* to deserving and eager students. Your continued support allows us to sustain and expand this support, which is essential to a strong department.

Where can I donate?

Discretionary Departmental Gifts Fund provide us with the greatest flexibility in responding to departmental needs and to take strategic steps toward the future.

Norman K. Flint Memorial Field Geology Fund commemorates Dr. Flint's devoted and inspiring teaching by helping with summer field camp expenses. This memorial fund was initiated by family, friends, students and colleagues of Dr. Flint.

Francis Dilworth Lidiak Memorial Fund supports lecture series and invited speaker costs.

Henry Leighton Memorial Scholarship Fund, established by Dr. Helen Leighton Cannon, provides a permanent graduate scholarship awarded for merit and need.

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Alvin J. Cohen Memorial Fund supports students conducting basic research in meteorics, mineralogy, and geochemistry.

Victor A. Schmidt Memorial Classroom Fund is a memorial classroom fund in honor of Professor Schmidt.

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William Cassidy's Research Inspires Commemorative Stamp

Emeritus Professor of Geology Bill Cassidy has returned to an early fascination: the Campo del Cielo meteorite crater field in the Gran Chaco region of Argentina. He has been studying the original dimensions of some of these small-impact craters and, in the process, recover the meteorites that created them. How big are these meteorites? During the last three field seasons, working at three different craters, he has recovered principal masses of 5,680, 9,213 and 14,850 kg. These are now on display in the region, part of which has been designated as a provincial park.

The main illustration shows the infalling asteroid breaking into crater-forming chunks over Campo del Cielo. The inset shows the stamp, which features the 37-ton El Chaco meteorite whose impact caused Crater 10.

The centerpiece of the park is the 37,000 kg El Chaco meteorite that Cassidy discovered in the late 1960s. This has become the subject of a newly issued Argentine postage stamp (see illustration). The 37,000 kg meteorite shown in the inset was photographed in 3-D, and each copy of the stamp comes with its own set of red and blue 3-D glasses!

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