



University of Pittsburgh School of Arts and Sciences Department of Geology & Planetary Science

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2003-2006

Special points of interest:

- New facilities
- New faculty
- Faculty Research
- Alumni news
- Program news

Faculty

Mark Abbott

Assistant Professor

Thomas Anderson

Professor

Rosemary Capo

Associate Professor

Mark Collins

Lecturer

William Harbert

Associate Professor

Charles Jones

Lecturer

Michael Ramsey

Associate Professor

Michael Rosenmeier

Assistant Professor

Ian Skilling

Assistant Professor

Brian Stewart

Chair and Associate Professor

Staff

Dolly Chavez

Receptionist/Secretary

Deanna Hitchcock

Graduate Administrator

Mat Romick

Department Administrator

Brian Games

Laboratory Technician



Many of our students and faculty are currently conducting research in beautiful Mongolia

From the Department Chair...

Dear Alumni and Friends,

It has been a long time since we've put out a department newsletter. I appreciate your patience in the intervening years, and I hope that you enjoy the new format. There are many exciting things to report. I took over as Chair in July of 2005, after 3+ years of excellent leadership from Bill Harbert. Bill did an amazing job of shepherding our department through a period of high turnover and difficult financial circumstances, and I now inherit a strong, committed faculty and a top-notch staff. I am grateful for the hard work and deft leadership of Bill and his predecessor, Bud Rollins (now Emeritus), and, of course, Tom Anderson, who served for many years before. They have made my job (relatively) easy

New Faculty

Since the last newsletter, two new faculty have joined us: **Drs. Ian Skilling and Michael Rosenmeier**. Professor Skilling came to us in 2002 from the University of Southern Mississippi, having earlier received his Ph.D. at the University of Lancaster (U.K.). He specializes in volcanic processes on the Earth and other planets, and he is building a strong research program that blends well with Professor Ramsey's group.

Professor Rosenmeier joined our faculty in 2003 with a Ph.D. from the University of Florida. He has set up a state-of-the-art stable isotope geochemistry lab to carry out paleoclimate studies, and his group is working closely with that of Professor Abbott. In addition to their research activities, Ian and Mike are also devoted and enthusiastic teachers, and they have been working hard to improve our graduate program. We are lucky to have them on board.

We have recently completed a search to fill our tenure-stream position in hydrogeology. This is a replacement for Dr. Chen Zhu, who took a position at Indiana University. We were lucky enough to sign on two excellent scientists, Drs. Emily Elliott and Daniel Bain, who will split the position. Emily and Dan received their Ph.D.s from Johns Hopkins University, and have been postdocs at U.S. Geological Survey in Menlo Park. They will join the department in January of 2007 - we will provide you with more details about their exciting research activities in the next newsletter. With this position, our faculty will reach its allocated number of nine tenure-stream faculty and two lecturers. This is a small number for a geosciences department, and we are working hard to raise the department's profile so that we can make the case

for growth. An active alumni base goes a long way toward this goal!

Research Groups

Meanwhile, our existing faculty continue to expand and grow their research programs. **Mike Ramsey** was recently named a member of the Earth-orbiting Advanced Spaceborne Thermal Emission and Reflectance Radiometer (ASTER) Science Team, which means a significant jump in responsibilities (and funding) for him. Mike has also been very active and visible (CNN, BBC, Discovery Channel) in his studies of the recent Mount St. Helens and Merapi Volcano eruptive activity. **Mark Abbott's** group continues to swell with an excellent corps of graduate and undergraduate students investigating climate change around the world. Mark's findings of "paleosmelting" by ancient civilizations in South America also landed him a *Science* paper (and some national press) in 2003. **Tom Anderson's** long-awaited edited volume on the Mojave-Sonora Megashear (*GSA Special Paper 393*), containing seven papers coauthored by him, has just been published. This promises to be the definitive volume on the controversial paleo-fault zone



Our home!

Space Research
Coordination Center

Department Updates



Michael
Rosenmeier



Ian Skilling

Letter from the Chair continued...

stretching from California to northern Mexico. **Bill Harbert** was instrumental in arranging a donation from WesternGeco (Houston) of seismic equipment worth more than \$1 million, and he has received a significant grant from DOE for him and his students to use it for environmental geophysical studies. And **Rosemary Capo** and I returned from our 2002-2003 sabbatical at Cornell University to continue our work in astrobiology, acid mine drainage, and soil evolution. As a barometer of the strength of faculty research in Geology & Planetary Science, I can report that our graduate program has been attracting a high caliber of students who are very active in research and in departmental activities. The list of publications authored by current and recent graduate students is impressive.

Undergraduate Programs

Our undergraduate programs are going strong. Under the able and tireless leadership of Lecturer/Coordinator **Mark Collins**, the Environmental Studies B.A. program continues as one of the best interdisciplinary majors at the University of Pittsburgh. In the last few years, students in that program have received prestigious national awards including a Truman Scholarship and two Morris Udall Scholarships, which is a testament to the quality of students we are attracting. At present, we have about 70 declared Environmental Studies majors, and have been graduating about 25 per year. **Charlie Jones** has been making significant improvements to our Geology and Environmental Geology B.S. programs, and is working with other faculty to revise and simplify the curricula and requirements. We currently have 30

declared majors in the Bachelor of Science programs, and one of our primary goals is to increase that number substantially. Charlie has also been working hard to bring in new microscopes for student petrography labs, and to reorganize and bolster our student rock and mineral collections. As part of the ongoing reorganization of office, lab and classroom space, we have created a new state-of-the-art petrography lab in Thaw Hall that provides an excellent setting for undergraduates to spend their many hours peering through the new microscopes. Students in all of our programs have been taking advantage of internship opportunities and participating in research projects with our faculty. We believe that student involvement in faculty research is critical to the success of both our teaching and our research missions.

Office Staff

Our office staff has also had some turnover in the past few years, but the front office is now kept firmly in control by three excellent members of our team: **Dolly Chavez**, the Department Secretary whom many of you already know; **Deanna Hitchcock**, the Graduate Administrator who also handles alumni-related issues, including this newsletter; and **Mat Romick**, our Department Administrator, who has been *the* key figure in making our department and grant finances work again. All three provide professional and efficient staffing of our new main office and reception area (in 200 SRCC), which are now grouped together with undergraduate resource rooms and a video kiosk highlighting the department and new developments in the geosciences. **Brian Games** continues as our isotope/ICP technician and trainer of students throughout the

department in geochemical techniques. We are fortunate to have this group of talented and dedicated staff members contributing to the success of our department.

What About You?

Finally, because we have only recently been able to come up with the funds and personnel to put together another newsletter, we haven't had the opportunity to solicit news from our most important resource -- you, our alumni. From our contact with you on an individual-to-individual basis, we hear about great things being accomplished by the graduates of our programs. But to get the word out to everyone, we ask that you send us updates on any aspects of your professional and personal life you wish to share with your fellow G&PS alumni, and we will include it in our next newsletter. We also list, at the end of this newsletter, the funds to which you may contribute if you wish to help our department and programs achieve excellence. I am honored to report a recent, very significant bequest intention from **Guy Sittler** (M.S. 1958) and his wife Joan that will provide an endowed fund to help strengthen our graduate program for years to come. Mr. and Mrs. Sittler join a select group of alumni who have provided and continue to provide generous financial support to our department. A geology program is only as strong as the graduates it sends out into the world, and we hope you will keep in touch and stay connected with us as you get about the important business of your life . . .

New Faculty highlights: Michael Rosenmeier & Ian Skilling

Michael Rosenmeier

Dr. Michael Rosenmeier (Ph.D., University of Florida, 2003) joined the paleoenvironmental research program at the University of Pittsburgh in 2003. Mike's research addresses the complex interactions among climate, humans and the environment. He employs stable isotope and geochemical analyses of lake sediment cores to decipher the history of aquatic ecosystems and surrounding wa-

tersheds. Sediment profiles record both long-term, climate-driven environmental changes and the results of recent anthropogenic impacts. These archives provide insights into the magnitude of human-mediated environmental shifts.

Ian Skilling

Dr Ian Skilling joined the department as an Assistant Professor in August 2002. His primary research interest are the processes and products of

interaction of magma with water and ice. His current projects include NSF-funded studies of voluminous phreatomagmatic deposits generated at the onset of Karoo volcanism in South Africa, andesitic magma-sediment mixing in the Sierra mountains of California and volcanoes generated by magma-ice interaction in British Columbia and Iceland.

Geophysics Group - William Harbert

Teaching

During the Fall term 2001, I was on my sabbatical, my first since being hired more than 10 years ago. I spent this time enrolled in an FAS section of 2nd year Russian and worked on finishing publication articles for submission.

During the Spring term 2002 I taught the following courses: GEO2447 Advanced Geographical Information Systems, GEO1901 Independent Study/Final Undergraduate Certificate in Geographical Information Systems Projects, and I taught the Geosciences/Planetary Science portion of the innovative Natural Sciences course. The number of Undergraduate Certificates in Geographical Information Systems awarded each year continues to grow. During the Spring 2002 term ten certificates were awarded. More information about the GIS Certificates can be found elsewhere in this newsletter.

This year I taught three 3-credit courses, Introduction to Geographical Information Systems, Advanced Geographical Information Systems and Advanced

ArcObjects Programming using Visual Studio .NET 2003. I have also been involved in a large number of directed study or capstone Geographical Information Systems projects. Two new computer laboratories have been moved to the second floor of SRCC. One is full of new Windows XP-Professional Dell and Gateway computers. Presently Arc/Info workstation, ArcGIS 8.3, Imagine 8.7 and Envi 4.0 software has been installed on these systems.

Research and Graduate Student Activity

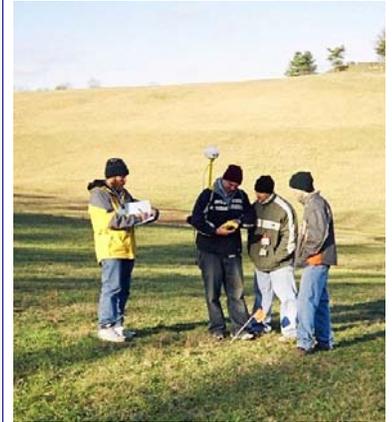
I have generated summer salary as an ORISE Research Associate at the United States Department of Energy and have two externally funded graduate students working at that facility. I received support to allow the working visit of the post-doctoral scientist, Dr. Dimitriy Alexeiev, of the Institute of Oceanography of the Russian Academy of Sciences to work at the University of Pittsburgh for two weeks.

Recently I have been involved in preparing an NSF proposal in collaboration with Dr. Robert Hayden of Archeology/Anthpology looking

at the GIS of ethnic conflict in former Yugoslavia. I have also collaborated with colleagues at Stanford and Utah investigating the paleomagnetism of Mongolia.

A very exciting development has been the donation of a million-dollar land seismic acquisition system to the Department of Geology and Planetary Science. Through the hard work and collaboration of Drs. Pervaiz Alvi and Terry Ackman, we are storing this system at GeoMechanics Incorporated and the Department of Energy. Seismic Micro Technology also donated their Kingdom Suite to the department. In addition, LandMark Geophysical has donated their pre-stack and post-stack software. These donations provide approximately \$3,000,000 in new hardware and software resources.

This donation would not have occurred but for the support and kindness of John Seitz and some of our University of Pittsburgh alumni working in the energy industry. My sincere thanks!



New CORS (continually operating recording station) GPS base station being run in cooperation between the National Geodetic Survey, PennDOT and G&PS.

Tectonics Group - Thomas Anderson

Since I left the position of Departmental Chairman, I have been very busy in an effort to catch-up with research activities neglected for many years. As a beginning, Patti Campbell and I published the results of structural and kinematic analyses of an exposure of the Mojave-Sonora megashear in northwestern most Sonora, Mexico. We have continued cooperation on a project to characterize the floor of a pull-apart basin in the East Potrillo Range of southern New Mexico. These activities dovetailed nicely with a major effort to prepare several papers for inclusion in a Geological Society of America Special Paper that focuses upon the conception and development of the Mojave-Sonora megashear, the very large fault that I have studied for decades in northern Mexico. Last October the volume comprising 25 chapters was published. I wrote four papers and co-authored three more with the objective of providing the field and analytical data that led to the conception and evolution of the hypothesis with L. T. Silver at Caltech.

An outgrowth of the summarization of the old work and new information led to the idea that the megashear may extend to Alaska. The possibility had been recognized by Canadian geologists, and **Erich Zorn** and I have attempted to test the idea by studying strongly deformed rocks in southern British Columbia. Although the data from microstructural analysis does not reveal the fault, we think that indications of sinistral movement may be preserved despite obfuscation because of strong younger deformation.

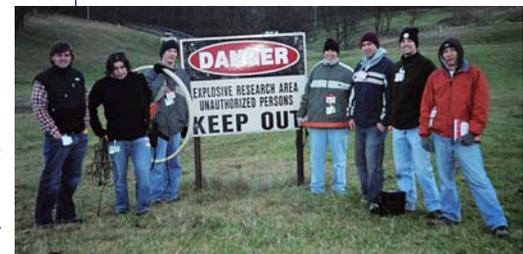
In the Appalachian region, **Paul Coyle** finished his thesis (Summer 2003) about stratigraphic and structural controls of iron mineralization in the Plateau and presented the results at national GSA in Denver, Colorado. In Nevada, **Danielle Deemer** has completed structural research (Fall, 2003) funded through Nye County, Nevada. She co-authored a poster at the Devil's Hole workshop and made three other presentations: one at the combined AEG/AIPG meeting in Reno, Nevada and two at the national GSA in Den-

ver, Colorado. Her work will bear directly upon theories of extension and Mesozoic thrusting along the Las Vegas Valley Shear Zone. Danielle is working as a geologist in Houston with Exxon/Mobil. **Daniel Lao-Davila**, who joined the Department in January, 2002 is off to an excellent start conducting field study of stratigraphic and structural relationships as part of his dissertation project southwestern Puerto Rico. He has begun to demonstrate that a complex structural history is recorded by ultramafic rocks emplaced (obducted) onto carbonate and volcanic rocks.

Damian Piaschyk has recently added to our knowledge of the Las Vegas Valley shear zone in Nevada. His field work, south of Danielle Deemer's area, reveals spectacular brittle deformation in Early Paleozoic carbonate rocks. The shattered beds provide highly porous and permeable pathways along which fluids may be transmitted rapidly. The shear zone is truly remarkable in terms of the intensity of fracturing along parts of its trace!

Cheers to all.

Department Research and Teaching Updates



New University of Pittsburgh Seismic Station

Paleoclimatology group: Mark Abbott & Michael Rosenmeier



Dr. Rosenmeier (left) and former graduate student Daniel Nelson (right) collecting water quality data from Big Twin Lake, northern Washington.

Dr. Rosenmeier has established a dedicated stable isotope laboratory facility within the Department of Geology and Planetary Science. This new facility houses a GV Instruments (Micromass) IsoPrime™ stable isotope ratio mass spectrometer and is equipped with several inlet modules for high precision determinations of carbonate $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ and water sample d^{18}O and D/H ratios. The laboratory is also equipped with a EuroVector™ high temperature elemental analyzer for combustion or pyrolysis sample preparation and determination of elemental and isotopic ratios (C, H, N and S) of sediments, soils, and biological materials.

Mike joins fellow paleoenvironmental researcher and sedimentologist Dr. Mark Abbott, Assistant Professor of Geology and Planetary Science since the Fall of 2001. Before joining the faculty at Pittsburgh, Dr. Abbott was an Adjunct Research Assis-

tant Professor at the University of Massachusetts. Mark has an active research program in Quaternary paleoclimatology and terrestrial sedimentology. The sedimentology facility at the University of Pittsburgh, established by Dr. Abbott, contains standard laboratory equipment for the routine analysis of lacustrine sediment cores including drying ovens, muffle furnaces, microscopes, centrifuges, water baths and balances. Instrumentation housed at the University of Pittsburgh sedimentology facility permit smear-slide analyses and measurement of sediment geochemical proxies (e.g., organic matter concentration). The facility includes an automated magnetic susceptibility track and ME2EI sensor as well as a variety of loop sensors and a number of computers. Imaging equipment for core archival purposes is available and includes a full spectrum light box and camera for gray-scale and

color change measurements. Facilities are also available for the extraction and isolation of sediment biogenic components including carbonate microfossils, diatoms, pollen and lipid biomarkers. The facility includes a new ~19 m² cold room for sediment core storage and an accelerator mass spectrometry radiocarbon (AMS ¹⁴C) preparation line dedicated for work on lacustrine samples.

Drs. Abbott and Rosenmeier have active research programs within Alaska, Bolivia, Ellesmere Island (Canadian Arctic), Greece, Guatemala, Kazakhstan, Mongolia, Nicaragua, New England, Ohio, Pennsylvania, Peru, Venezuela, Washington State, and the Yukon Territory. During the summer of 2005 field parties from the paleoenvironmental group conducted research in Kazakhstan, Mongolia, Peru, Greece, and the Pacific Northwest.

Department Research and Teaching Updates

Planetary Science Group: Ian Skilling and Michael Ramsey

Planetary science has been a long-standing specialty of the department and is continuing today in new and multi-disciplinary ways. The current research focuses on several planetary surface processes such as lava/ice interaction, impact and volcanological cratering, eolian transport, and in the NASA Astrobiology Program. Much of this work relies on laboratory spectroscopy as well as developing new image processing tools, theoretical modeling, and studies of terrestrial analog sites.

Faculty highlights

Michael Ramsey's primary research is the application of innovative theoretical models applied to infrared remote sensing data in order to derive fundamental properties of geologic surfaces. There are several planetary applications including a newly funded NASA project that focuses on the detection and discrimination of small-scale (< 2km) craters. This work, in conjunction with Dr. David Crown at the Planetary Science Institute, funds a Ph.D. graduate student (**Veronica**

Peet). She is working to derive the detection limits of satellite images in order to discriminate crater formation mechanisms.

Two field sites are being examined: Meteor Crater, Arizona and El Elegante maar crater, Mexico. **Tophier Hughes** is a new Ph.D. graduate student in the program and is working on laboratory spectroscopy in support of new instruments now on their way to Mars. Finally, **Stephen Scheidt's** graduate research is also focused on satellite data of Mexico, using it to examine sand transportation in large dune fields. This work has application for both Earth and Mars data.

Ian Skilling is interested in magma-ice interaction on Earth, which also has applications to the Martian surface. His Martian research interest are focused on understanding the processes and products of interaction of magma and ice-cemented sediment. Given the recent discovery that even outside of the Martian polar regions, the near surface in many areas contains a high percentage of water ice, then such

processes of interaction are likely to have been very common in the Martian past.

Rosemary Capo and Brian Stewart are continuing their collaborations with the Penn State Astrobiology Research Center (<http://psarc.geosc.psu.edu>), with funding from the NASA Astrobiology Institute. This work involves investigations of Archean (>2.5 billion-year-old) surficial deposits to determine the chemistry of Earth's early atmosphere, and to understand the processes that lead to the formation of habitable planets. Graduate students Katie Walden (M.S. 2004) and Sherry Stafford (Ph.D. 2006) completed isotopic studies of paleosols (ancient soils), and their work is helping researchers model weathering processes that might operate under very different atmospheric conditions. Additional studies are being carried out on marine sediments that are over three billion years old (from a drill core in Australia) to understand the constitution of primitive oceans on a mostly abiological world.

In addition, now "retired" profes-



The fragment of Campo del Cielo meteorite discovered by Professor Cassidy's team in September 2005 is being lifted by a crane from a 7m deep trench in Argentina.

Planetary Science Group continued...

sors continue to contribute to the planetary science program in the department. William Cassidy became an Emeritus Professor in 2000, but continues his research into the origin and evolution of planetary bodies in the solar system. He was recently awarded a NASA grant to study the Campo del Cielo impact site in northern Argentina, spending a month in the field. That work resulted in the discovery of a large fragment of the original meteorite. Bill has also published a book on the search

for meteorites in Antarctica, titled "Meteorites, Ice, and Antarctica" by Cambridge University Press, which can be found in bookstores and amazon.com's website. Bruce Hapke is also a very active Emeritus Professor in planetary science in the Department. He continues to work on current NASA missions studying Cassini data from the rings of Saturn to Hubble telescope data of the surface of the moon. Recently, he was given a prestigious honor having a newly discovered mineral

named after him. *Hapkeite* (Fe_2Si) was found in a lunar meteorite and confirms predictions by Dr. Hapke three decades ago that vaporized iron and other minerals could condense as a glassy coating on lunar soils, a process known as space weathering.

Volcanology Group: Michael Ramsey and Ian Skilling

The Volcanology research program within the Department began in earnest in 2000 with the hiring of Dr. Michael Ramsey and expanded greatly with the addition of Dr. Ian Skilling in 2002. Each brings a different emphasis, with Ramsey focusing on active monitoring, satellite imaging, and extrusive lavas, while the research emphasis of Skilling is on older volcanic units, lava/volatile interaction, and explosive products. The program concentrates on a combination of intense coursework, field projects, laboratory research, and participation in national and international conferences/field trips. Many more details can be found on the Volcanology Group's website: <http://www.geology.pitt.edu/volcanology>

Faculty highlights

Ian Skilling currently has two graduate students, **Tracee Imai** and **Kristen LaMoreaux**. Tracee is looking at the controls on andesitic magma fragmentation and mingling with wet sediment in an area of the Sierra mountains of California, and Kristen is studying caldera collapse within ice-sheets. **Jefferson Hungerford** began in May 2006 and is studying the products of magma-ice interaction at a long-lived volcano in northern British Columbia. This project aims to use the products of magma-ice interaction to determine the presence and thickness of the Cordillieran

Ice Sheet in this region over the last 2 million years.

Dr. Michael Ramsey joined the faculty in May, 2000 after receiving his Ph.D. and work as post-doctoral researcher at Arizona State University. His research interests are diverse, but linked by the common thread of satellite-based remote sensing in order to understand key geologic surface processes on Earth and Mars. A primary focus of that research theme is volcanological processes and their subsequent hazards to human life and infrastructure. He is a science team member of a NASA Earth-orbiting imaging instrument and has ongoing field- and satellite-based research based projects in Hawaii, Alaska, Kamchatka (Russia), Japan, Nicaragua, and the Pacific Northwest of the United States.

Dr. Ramsey supervises a large research group with six Ph.D. graduate students, several undergraduate students, and a post-doctoral researcher. Of the graduate students, three are working directly on volcanological research questions. **Adam Carter** is using satellite and field-based infrared data to understand lava dome and pyroclastic flow deposits at Bezymianny Volcano, Russia. **Rachel Lee** is working on a NSF-funded project to examine the infrared energy emitted by mineral/rock samples in the lab when they are heated to their melting points. **Shellie Rose** is trying to

better understand the complications of small-scale heat and gas emission on satellite images of Klyuchevskoy Volcano, Russia and Cerro Negro Volcano, Nicaragua.

Biennial Volcanology Field Trip to California

Every other summer, Professors Ramsey and Skilling lead a one-week long summer field trip for the GEOL-2750 course. This trip is designed to expose students to a wide variety of silicic volcanic deposits throughout California's Sierra Nevada Mountain Range. In addition to providing an excellent and in-depth exposure to recently-erupted volcanic units, the trip also focuses on the regional geomorphology, the environmental issues surrounding Mono Lake, CA, as well as hazard monitoring. The trip has ranged in size from 4 to 10 students and always received high marks from the participants. In coming years, we hope to augment some of the travel costs for the students and expand the size to 15-20 participants.



Graduate student, Adam Carter, and Dr. Michael Ramsey on the salt lake deposit in San Pedro de Atacama Desert, Northwest Argentina, November 2004

Department Research and Teaching Updates



Dr. Skilling (center) discusses the features seen in this outcrop of block-and-ash flow deposits near Kirkwood, California

Environmental Studies Program: Mark Collins



Yellowstone Summer
Field Camp
2004

Department Academic Programs



Marion Sikora and horse mandible collections, northern Gobi Desert, Mongolia. Ms. Sikora, a dual degree candidate in Geology and Environmental Studies, was named a 2005 Morris K. Udall Undergraduate Scholar and 2006 Udall Scholarship Honorable Mention. Ms. Sikora's research has focused on Central Asian climate change and, more specifically, improved understanding of the environmental context in which the nomadic pastoral economies of Mongolian evolved. Marion participated in field research in Mongolia during the summers of 2004 & 2006 and completed field research in Kazakhstan and Greece in 2005.

The Environmental Studies Program continues to mature, and our students continue to demonstrate both achievement and initiative. We have about 70 majors, including part-timers. Environmental Studies students' overall GPA continue to average better than CAS students as a whole. Many students are double majors; double/dual degrees include Biology, History and Philosophy of Science, Studio Arts, Political Science, Anthropology, and English.

Over the last few years, roughly half of the Environmental Studies students graduating each April earned honors (3.25 GPA or above); about the same percentage were either double / triple majors or earned certificates in other disciplines. The program includes six Phi Beta Kappa inductees over the last three years. In addition, **Clare Sierawski** of Naperville, IL, an Environmental Studies/Political Science/East Asian Languages and Literature major, was one of two Pitt students to win a national **Truman Scholarship**. Ms. Sierawski is currently working as a policy analyst in the Department of Transportation in Washington, D.C. Ms. Sierawski and **Gwen Morton**, an Environmental Studies/Political Science major from Columbus, OH, each won national **Morris Udall Scholarships**. Ms. Morton is also co-wrote and performed in a one-woman play this spring (2005) as part of her B.Phil. requirements from the University Honors College. Finally, **Marion Sikora** won a 2005 Udall Scholarship and was a 2006 runner-up. Ms. Sikora is working with Professors Mike Rosenmeier and Mark Abbott on climate changes; her research areas include Mongolia, Kazakhstan and Greece (see

photo on lower left of this page). It appears that no other environmental program in the nation has winners in both the Truman and Udall competitions.

In the last year, nearly half of all ES undergraduate population participated in **internships**. Placements include the Frick Environmental Center, Pittsburgh Zoo, Oil Creek State Park, Friends of the Riverfront, Nine Mile Run Watershed Association, PA Department of Environmental Protection, PA Game Commission, Solutions for Progress in Philadelphia, the Thorpwood Nature Center in Thurmont, MD, the National Science Foundation, Pennsylvania Resources Council, Kiski-Conemaugh Stream Team in Johnstown, Stakeholder Forum in London, England, and the Ministry of Nature and Environment, Mongolia.

The Honors College and the Geology and Planetary Science Department have created a summer exchange program with the University of Alaska, Fairbanks (UAF). Courses include Biology and Ecology of Marine Invertebrates. Last summer, **Matthew McCullough ('05)** and **Douglas Morrell ('05)** took the Alaska course. Tuition, housing and fees are paid for by the University of Alaska; transportation costs are supported by Heinz monies. Other **field experiences** include courses at Yellowstone National Park (University Honors College), Semester at Sea, the Student Conservation Association, and Study Abroad. Students also participated in geology and environmental studies in Australia, England, Denmark, Bolivia, and Costa Rica.

The **Environmental Studies Peer Advising / Resource Room** (218 SRCC) helps fellow students to pick courses, develop internships, apply for field camps, conduct job

searches, and research graduate schools. The student-run Resource Room also houses materials and websites regarding employment and internship opportunities as well as grad school brochures and information.

The **Environmental Studies Advisory Board**, made up of professionals and academics from both in and outside the University, meets every other year to discuss the program and share advice. They have proven to be an invaluable resource.

In addition to teaching, advising and setting up internships, I've also served on the University-wide College Writing Board and participated in the Teaching Excellence Workshop. In 2004, I had the chance to work as one of the field leaders for the Society of Environmental Journalists' Annual Conference, and was invited presenter at the Fourth Annual Maurice Goddard Forum on Sustainability in Harrisburg. For the last few summers, I've had the opportunity to teach the public-policy section of the Yellowstone Field Course.

It is a pleasure to work here; I count myself lucky to work with so many excellent students (and alumni), as well as the outstanding Geology administration -- Bill Harbert, Brian Stewart, Mat Romick, Deanna Hitchcock and Dolly Chavez.

If there is anything that you need from me, I hope you won't hesitate to call or write. Please keep in touch.



Kevin Robinson (B.S., Geology, 2004) was named a 2004-2005 Fulbright U.S. Student Fellow. Now a graduate student pursuing the degree of Master of Science in Geology and Planetary Science under the direction of Dr. Michael Rosenmeier, Kevin conducted a 10-month project aimed at reconstructing the environmental history of northern Mongolia from lake sediment cores. Mr. Robinson is the only Pitt student ever to receive a Fulbright Research Fellowship as an undergraduate.

Growing and improving our undergraduate B.S. programs

Charlie Jones

Things are changing around here! We are constantly trying to improve things for our geology and environmental geology majors. Here are some examples:

A new petrology lab!

Gone are the old, dark, dingy labs stuffed with dirty clutter. We now have a large, freshly renovated petrology lab flooded with natural light. We have new lab benches with cabinets for microscope storage, plus freshly painted rock cabinets for our teaching collections. Students have 24/7 access to the rocks and minerals that they will come to know and love. We also have six new petrographic and four stereographic microscopes with video monitors and a computer projector. Soon we will install computers and put up a suite of posters to remind our budding geologists of the splendors of the natural world.

More field trips!

The Dean of Undergraduate Studies has agreed to cover vehicle rental costs for our field trips. Accordingly, we can offer more field trips than we could afford in the past. Field trips are obviously a great way to instill the love and understanding of geology that have nurtured and sustained generations of geologists. Anyone want to lead some field trips?

More undergraduate research!

We have quite a number of really smart undergraduates. As undergraduate advisor, I miss no opportunity to encourage students to seek out research opportunities from our faculty. We have been fortunate that many have in fact sought out research opportunities, and that many have excelled in their efforts! Students have not only acquired lab experiences, but some have travelled as far afield as Mongolia and Greece! Gaining such extensive research experiences early in their careers can only help our undergraduates map out their futures.

Reorganized teaching and reference collections

We are sorting and upgrading our extensive collection of minerals, rock samples, and fossils in order to better educate our students. In addition to the lab samples, we are putting suites of reference samples (paired with thin sections when appropriate) into the new petrology lab rock cabinets. These will allow students to better study for lab exams, to see more examples of diverse rocks and minerals, and to give them the resources needed to answer their own questions when working on labs.

New rock displays

The display cases have long been run-down and underused. We have refurbished almost all of the display cases by adding new lighting and painting their interiors a deep blue. The new shelves are now filled with minerals and rocks selected to be both attractive and interesting. The minerals exhibit focuses on reviewing the physical properties of minerals and on displaying spectacular specimens of the common minerals that geologists actually find in the field. The igneous and sedimentary rock exhibits focus on what we can learn from hand samples. Our recitations for the introductory geology classes direct students to study our exhibits, and our geology majors have expressed appreciation for the concise reviews of the basics that they provide. Plus, they are actually quite attractive!

We are trying to grow our B.S. programs to ensure a future for geology at the University of Pittsburgh. We are currently around 30 B.S. majors, which is actually a pretty nice number from the point of view of teaching. To attract more majors we have developed the following:

New promotional materials

We have created fliers to distribute in our large classes to attract people who love science, nature, and the variety that comes with geology. We also hand out plainly written course descriptions intended to entice people into taking a second course in geology.

New recitation materials

The recitation exercises that accompany our introductory classes have long needed work. Last year we got a University grant to revise our recitation exercises. We have improved the rock and mineral kits by adding larger and better samples, and we are adding satellite images, field photos, and maps to our recitations on volcanoes, earthquakes, beaches, etc. Most of the recitations feature small-group exercises that allow students to address problems of obvious relevance. We hope that the exposure to higher quality hands-on materials plus more engaging problems will translate to more majors.

Maps and satellite images in the classroom

Our main classrooms are now filled with framed maps and satellite images that support teaching and help inspire a love of geology.

Field Trips

All students in the introductory physical geology lab are required to take a one-day field trip that focuses on the geology and environmental geology of the Pittsburgh area. A one-day trip to see the carbonates and geologic structures of the Altoona, PA, area is offered as an extra credit option for all students in our introductory geology classes. This trip is quite successful at engaging interest!

Future plans

- **Big field trips:** Plans are in the works for two-week summer field trips to look at the geology of Owens Valley, CA, and northern Wyoming.
- **Better lab materials:** A proposal to the National Science Foundation seeks support for more microscopes and suites of stratigraphically-related sedimentary rock suites that will be used to analyze the response of the New York margin before and during the Taconic and Acadian orogenies. The goal is to get our sedimentology students to better think on the scale of basins.



Sarah Strano, a double major in Geology and History at the University of Pittsburgh, was named a 2006 Honorable Mention Recipient of the Morris K. Udall Undergraduate Scholarship. Sarah is examining a collection of sediment cores from twenty lakes distributed across central and western Mongolia. She conducted research in Mongolia during the summer of 2005 and will participate in field research in central France during the summer of 2006.

Department Academic Programs

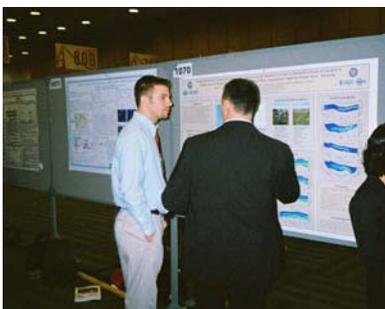
Clay Magill, who graduated May 2006, completed the Bachelor of Philosophy degree within Pitt's Honors College under the direction of Geology and Planetary Science faculty member Michael Rosenmeier. His research addressed the impact of climate change on the ancient Minoan populations of Crete. Clay will continue his paleoenvironmental studies at the University of Cambridge's Churchill College under the direction of Dr. Philip Gibbard, a noted authority in the Quaternary Sciences.





New University of Pittsburgh Seismic Station Second Picture: New CORS (continually operating recording station) GPS base station being run in cooperation between the National Geodetic Survey, PennDOT and G&PS.

Department of Geology and Planetary Science



Student Brian Lipinski presenting poster at the December 2004 American Geophysical Union meeting in San Francisco, CA.

Geographical Information Systems Program: William Harbert and Michael Ramsey

Since its inception in 2002, the Professional Masters in Geographical Information Systems continues to become more successful in the Department of Geology and Planetary Science. This non-thesis degree has helped many students in industry and elsewhere to gather a competitive edge on the job market. The degree combines Geology, Geography, Business,

Computer & Information Science and other professional skills to form a well-rounded program. So far, three classes of students have completed their MS degrees and are now working in different areas of the United States including Ohio, California, Washington State and Virginia. Presently there are eight students enrolled in the program with more on the

way this Fall. New Department facilities, including new Windows and UNIX labs, have enhanced the learning environment for achieving a Professional Masters degree in GIS.

The Pro-MS program is described in detail at the web site:

<http://pro-ms.geology.pitt.edu>

Check this web page for updates and new information.

Emeritus Faculty updates

Edward Lidiak

My research activities continue to be centered on the Caribbean region. During the past five years, I have been a principal co-investigator of a UNESCO/IUGG project dealing with Caribbean Plate Tectonics. We are in the process of publishing the results of our research activities in a special volume entitled "Caribbean Tectonic, Magmatic, Metamorphic and Stratigraphic Events: Implications for Plate Tectonics." The volume is scheduled to be published by *Geologica Acta* in the Spring of 2006. My specific contributions include serving as co-editor of the volume and of being a co-author of three research papers.

I also taught the undergraduate mineralogy course (Geology 1001) this past Fall Term. It was actually great fun getting back to teaching—all those smiling faces, etc.

My best wishes to all of you.

William Cassidy

We are progressing on my NASA grant titled "Studies Related to Small-Scale Impacts on Planetary Surfaces."

We gave a talk at the Lunar and Planetary Science Conference, Mar. 12-18 this year on the paper, Revisiting the Campo del Cielo, Argentina crater field: A new data point from a natural laboratory of multiple low velocity, oblique impacts.

I feel that our project has had an acceptable first year. I expect we will be able to retrieve data

on a minimum of two more craters during the coming field season, which I plan to carry out during the period June 21 – Sept. 7, 2006.

Bruce Hapke

Last August I was part of a team that used the Hubble Space Telescope to take images of the moon in far ultraviolet wavelengths. The purpose of the observations was to assess the usefulness of the UV region of the spectrum for remote sensing. It was necessary to use a telescope in orbit above the earth because ozone in the atmosphere absorbs far UV light. Laboratory measurements that my former students Jeff Wagner and Eddie Wells and I carried out 25 years ago had indicated that the UV reflectance of the moon might be able to pinpoint the location of ilmenite deposits. Ilmenite would be an important natural resource for a permanent lunar base because it readily absorbs and releases hydrogen from the solar wind and it can be easily dissociated to liberate oxygen. We are still analyzing the data but gave a paper announcing preliminary results at the Lunar and Planetary Science Conference in Houston in March, 2006. The telescopic observations confirmed our old laboratory results. Last June the Cassini spacecraft in orbit around Saturn flew between the sun and the rings of the planet in such a way that the point of zero phase angle (the angle subtended by the sun and the spacecraft as seen from that point) traversed the rings.

The result was that it captured the opposition effect as it went through the rings. The opposition effect is a sharp brightening of a surface when seen close to zero phase angle. It can give information about the sizes and spacing of the light scatterers that make up the surface. I collaborated with my former student Bob Nelson, who is a member of the Cassini Visual and Infrared Imaging Spectrometer team, to analyze the opposition effect data. We presented a paper on our results at the Houston meeting.

Harold (Bud) Rollins

I have been able to continue my research on St. Catherines Island and have several contributions soon to be published in a (perhaps) overly voluminous Bulletin of the American Museum of Natural History, edited by David Hurst Thomas. This should be out by the end of 2006, and deals with the anthropological and geological history of the Island. In addition, I agreed to serve on the SCI Scientific Research Advisory Board. I presented an invited paper in September 2005 at a conference in Venezuela (Margarita Island to be exact - yum). The paper, covering the history of human exploitation of hard clams in North America, was part of the international Census of Marine Life program. The papers will be published in a special volume of BAR (British Archaeological Research), hopefully by the end of this year.

Give Today!

Contributions from our alumni play a vital role in the functioning of the Department of Geology & Planetary Science. We hope that you can help support our teaching and research activities through donations to our program. Contributions to the Unrestricted Department Gifts Fund provide us with the greatest flexibility in responding to departmental needs, but we also welcome gifts earmarked to one or more of our special funds, listed below:

_____ **Norman K. Flint Memorial Field Geology Fund** – In appreciation of devoted and inspiring teaching in the field and in the classroom, Professor Flint’s students, friends, and colleagues have established a memorial fund in his honor.

_____ **Francis Dilworth Lidiak Memorial Fund** – Support generated from this account is used for departmental seminars in which outstanding scientists are invited weekly to present public lectures on topics in the geological and planetary sciences.

_____ **Henry Leighton Memorial Scholarship Fund** – This scholarship was established in response to a contribution from Professor Leighton’s daughter, Helen Leighton Cannon. The fund provides a permanent graduate scholarship that is awarded on the basis on merit and need.

_____ **Samuel B. Frazier (BS, 1949) Student Resource Fund** – Established by family and friends of Samuel Frazier, this fund is used to provide educational expenses for undergraduates within the Department.

_____ **Harry J. Werner (BS, 1977, MS, 1980) Oil Finder’s Fund** - In an effort to continue to attract University of Pittsburgh students to prepare themselves to meet the diverse challenges presented during the search for energy resources, Franco Corona initiated the Harry J. Werner Oil Finder’s Fund in honor of Professor Werner.

_____ **Alvin J. Cohen Memorial Fund** – The family of Professor Cohen has suggested that donations in memory of Dr. Cohen be made to the Department of Geology & Planetary Science for support of students conducting basic research in fields close to Alvin’s interests.

_____ **Victor A. Schmidt Memorial Classroom Fund** – In memory of Professor Schmidt and in commemoration of his love of teaching, family, friends and colleagues have created a memorial classroom fund in his honor.

_____ **Unrestricted Departmental Gifts Fund**

_____ **Other (please specify):**

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Dr. Rosenmeier and students collecting sediment cores from Drakolimni Gamila, Pindus Mountains, northern Greece.

*Department of
Geology and
Planetary
Science*

*Thank you for
your
generous
contribution.*

New fossil discovered by Geology 0800 student, Adam Striegel



On a field trip, Geology student Adam Striegel, stumbled across the fossil of an oversized, salamander-like creature with vicious crocodile-like teeth that lived about 300 million years ago, paleontologists said.

Scientists say the find is both a new species and a new genus, a broader category in the classification of plants and animals. Talks are under way about what to call the new species, starting with "Striegeli" -- after the University of Pittsburgh student who discovered it.

Initially, Adam Striegel picked up the softball-sized rock along a fresh road cut near Pittsburgh International Airport, and thinking

it was of little interest, threw it aside. Walking back through the same area, he retrieved the stone and showed it to class lecturer, Charles Jones.

Jones spotted the teeth first, then the outline of a skull. "It was immediately clear that this was rare," Jones said.

Paleontologists with the Carnegie Museum of Natural History also were stunned when the impeccably preserved fossil from a trematopid amphibian was unearthed in the spring of 2005 in their own back yard. The discovery has set off a hunt for bigger finds that could help define a gray area in the Earth's history in what is now the northeastern United States.

The creature, believed to have been 3 to 4 feet (0.9 to 1.2 meters) long, is "new to science but we know it belongs to fairly terrestrial-adapted amphibians living in the Pennsylvanian Period, about 300 million years ago," said Christopher Beard, curator of vertebrate paleontology at the museum and adjunct faculty member.

Carnegie paleontologist Dave Berman knew exactly what the stone-encased skull fossil was because only two others of the same family are known to exist. He found one of them more than a decade ago in New Mexico.

The species has some characteristics of a crocodile, but is closer to a massive salamander -- one that could tear its prey to shreds.

"It was a lucky shot that kid found the fossil for sure, but at the same time the road construction in that area has revealed ancient layers of rock," Beard said. "It is now an optimal time to go back out. Ideally we may be able to reconstruct the entire ecosystem, plant and animal life of 300 million years ago," he said.

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