

DEPARTMENT OF
GEOSCIENCES
COLLEGE OF EARTH AND
MINERAL SCIENCES

Professors Alexander, Gold, Parizek and Colleagues Research Egyptian Treasures

Three geosciences faculty are conducting site characterization studies at the ancient Heirakonpolis (Nekhen) archaeological site in southern Egypt. The faculty are working with Recep Cakir (GeoEnvironmental Engineering), Katarin Parizek, (Instructor, Integrative Arts) and Prof. Elizabeth Walters, a PSU Art Historian/

Archaeologist who initiated the project and whose intellectual interest in this site dates from her graduate student participation in the Fairservis expeditions during the 1970's. The Narmer Pallet found at this site in 1898 commemorates and identifies Nekhen as the first administrative seat of a unified Upper and Lower Egypt. It was also the home of Horus, the Falcon God, whose gold statue was found at the site.



Shel Alexander (seated) conducting seismic survey at Aswan Granite Quarry

During the past 5 decades, excavations at many archaeological sites in Egypt have been thwarted by a rising groundwater table due to the increasing use of flood irrigation for crops and disposal of domestic wastes. At Hierakonpolis, early excavations in 1898 extended to chambers at depths of 4 to 5 meters, whereas now the water table is at an average depth of 1 to 1.5 meters. To study the groundwater regime at Hierakonpolis, 146 piezometers were set to 5 meters to monitor changes in groundwater temperature, composition and elevation. Soil temperatures at a depth of 90 cm are also measured in 144 shallow holes on a regular basis. In addition, 11

holes drilled to 22 meters have been used to follow deeper groundwater circulation. Shallow seismic reflection and refraction surveys (over 300 profiles) have proven effective not only for locating buried artifacts and foundations but also for imaging the configuration of the water table, the capillary fringe, and deeper dis-

continuities. Two deep drill holes (100 and 135 meters) were completed to verify the nature of two prominent seismic reflectors found at depths of 30 and 100 meters. Limited excavations on very shallow, fast seismic anomalies indicate an occupation strati-

graphy extending back to early Naqada I time (approximately 5,800 years BP). Analysis of repeated satellite imagery shows that the start of a major new irrigation project located at higher elevations southeast of the site has caused the water table to become shallow with time since 1999, worsening the water problem at Hierakonpolis and damaging or destroying thousands of mud brick homes in nearby villages. These approaches to characterize ancient sites adversely affected by shallow groundwater and soil water have been initiated for the Aswan granite quarry; Old "Fort", Valley of Kings and elsewhere in Egypt.

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From Tim Bralower, Department Head



Dear Alums:

It has been an extremely eventful and productive year in the department. Speaking of productive, our undergraduate and graduate programs are going gangbusters. We are seeing a significant increase in our undergraduate majors (over one hundred and counting) as word of the petroleum industry job market spreads and our new major in Geobiology begins to attract a different type of student to our program. Our graduate program, one of the largest in the country, continues to support more than one hundred students as teaching and research assistants. We were flattered by our US News and World Report national ranking of #7 for all doctoral graduate programs and the individual rankings of #2 for geochemistry (behind CalTech) and #3 for geology (interpreted as the combination of sedimentology, stratigraphy, structure and tectonics) behind CalTech and Stanford.

This was a year of some very significant transitions. Professor and Dean Eric Barron left us to accept the position of Dean of the Jackson School of Geosciences at the University of Texas at Austin. Eric had an illustrious twenty-year career at Penn State, during which he established himself as the leading paleoclimate modeler in the country and advised a group of excellent students. He elevated the Earth System Science Center to international stature and recognition. During his tenure as Dean, Eric raised the profile of all EMS students through new programs and improved facilities, and initiated a diverse array of significant programs, including the Alliance for Earth Sciences, Engineering and Development in Africa (AESEDA).

We welcome Assistant Professors Matt Fantle and Pete LaFemina to the department. Matt comes to us from UC Berkeley and specializes in the application of large stable isotopes to environmental and paleoceanographic problems. Pete hails from the University of Miami and focuses on crustal deformation and geodynamics using techniques including remote sensing. Pete works in a number of exotic locations, including Iceland and Costa Rica.

Our faculty continue to win national and international acclaim. This year, Professor Richard Alley won two highly prestigious international awards, the Louis Agassiz medal of the European Geosciences Union and the Seligman Crystal of the International Glaciological Society. The awards are described in more detail later in the newsletter, but, obviously, we are enormously proud of Richard's remarkable achievements. Professor Tanya Furman also was selected for a major honor, the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. She received this prestigious honor at a ceremony at the White House.

We have some exciting new programs to report. Field camp was held this year at the Osservatorio Geologico di Coldigioco in the Italian Apennines. The camp was led by Professor David Bice and Station Director Alesandro Montanari, with help from Professors Don Fisher and Rudy Slingerland. The students spent 6 weeks mapping sedimentary units in the Apennines, and igneous and metamorphic rocks in the Southern Alps. They also received a large dose of culture. Our plan is to alternate the Italian field camp with our successful western US camp. Also in summer 2006, Professor Andy Nyblade co-taught a geophysics field course in South Africa as a part of his rapidly growing AfricaArray program. The camp included 17 students from three universities. The first three students in our combined 3-year+2-year dual-degree program with Fort Valley State University in Georgia arrived at University Park in Fall 2006: LaMichelle Arnold, Enrique Perez and Leon Smith. We welcome them to the department.

We wish you and yours a healthy and happy 2007.

With best wishes,

A handwritten signature in black ink that reads "T Bralower". The signature is written in a cursive, slightly slanted style.

Skytop Revisited: Local Challenges for Geologists

Contributed by Professor Duff Gold



1. Efflorescent mineral bloom (white patches) at base of Siebert Waste rock site, adjacent to Siebert Pond, after prolonged dry spell.

lition cubic yards of mostly pyritic Bald Eagle sandstone was excavated and then distributed onto multiple sites. Although most of the pyritic rock was dumped into nearby waste piles (Arbogast, Siebert, and Skytop), a substantial amount was used as “fill” and “dressing” aggregate along an 8-mile section of the highway before its acidic nature was realized. The toxic nature of the regolith at some of these sites is evident by the absence of, or stunted, vegetation, and the appearance of efflorescent minerals such as gypsum, epsomite, and a variety of Ca-, Mg-, Al-, Fe-, and other sulfates after prolonged dry spells (photographs 1 and 2). Objectives are to create socially and politically viable tactics while testing in situ remediation methods, and concurrently to develop suitable repository sites for the “moveable” excavated pyritic rock.

A main hurdle to the opening of this section of I-99 after a 3-year delay is the classification of Buffalo Run as a “high quality stream,” an option-limiting legal imperative that mandates moving all polluting crushed rock out of that drainage basin. Remediation must address both the widely dispersed, excavated rock and the immovable pyritic rocks exposed in new road-cuts. In addition, some of



2. Four overgrowths of efflorescent minerals (gypsum, pickeringite, epsomite, alunogen).

The apparent stall of construction along Interstate I-99 at Skytop during the past year belies intense, multifaceted efforts to resolve acid pollution from weathering of inadvertently disturbed pyritic rock. The problem arose when more than 1 mil-

the pyrite-laced aggregate underlies roadbed construction on the Bald Eagle Valley side of the ridge. During the past year, a group of us (Professors Hu Barnes, Duff Gold and Art Rose) have examined the effectiveness of a variety of slurry agents, including Bauxsol (alkaline residuum from bauxite refining), “Baghouse Lime” (partly $\text{Ca}(\text{OH})_2$, MgO and powdered limestone for in situ treatment of roadbed and waste-dump aggregate. Developing slurry mixes with the optimum rheological, buffering and nonpolluting properties has been a challenge. Field-scale tests revealed inadequate penetration of Bauxsol slurry into the piles of crushed rock, both at their surfaces and within, in part due to low-permeability layers of baghouse lime, a waste product from a local lime plant (see photograph 3 of large buttress). Interactions of these treatment materials with pyritic rock are being monitored in some piles by analyses of the



groundwater in monitoring wells, of seeps and of associated efflorescent mineral blooms. Outflow waters ideally should have pH's of 6-9 and must not be excessively acid, caustic, or toxic.

There are 9 rock piles to be moved, treated, and entombed in a proposed new landfill 3 miles from Skytop that is to cover 23 acres to a depth of a few tens of feet. A second set of immovable pyritic rocks must be treated in situ, e. g., two large cut faces; (500 x 800 feet, and 150 x 300 feet), probably with a neutralizing and buffering slurry mix as well as a covering of natural materials and synthetic liners. A third set of sites along already-completed sections of the highway where pyritic fill is the sub-base to elevate the north-bound lane up to 17 feet over a distance of 5000 feet, and as buttress material to load the toe of major cut face in a landslide-prone slope. Highways under normal conditions cost nominally \$10 million per mile. Thus, solutions to these problems must be products of combining economic, engineering, legal and societal constraints with geologic and geochemical parameters.

3. “Buttress fill” trench showing limited penetration of bauxsol (red) slurry over white efflorescent minerals (including green rust and gypsum) in layers of “baghouse lime”, and sulfate encrustations.

New Faculty in Geodynamics and Geochemistry

Peter LaFemina



My wife, Dr. Il-iana Baums (Dept. of Biology), and I are very excited

about our move to Penn State. I grew-up in Connecticut and look forward to returning to a part of the country that has more than two seasons and outcrops of non-carbonate rocks. I cut my geologic teeth in New York at Hartwick College and the French Alps (senior thesis). Undergraduate field excursions to Hawaii, the Galapagos and Costa Rica peaked my curiosity in studying active volcanoes. This evolved into my MS degree from Florida International University, Miami, where I investigated soil degassing at Cerro Negro and Telica volcanoes, Nicaragua. During and after my MS degree, I worked at The Center for Nuclear Waste Regulatory Analyses at Southwest Research Institute in San Antonio. There, I investigated seismic and volcanic hazards for nuclear facilities and continued my research in Nicaragua. During this research, I met my dissertation advisor, Dr. Tim Dixon (University of Miami). Tim and I collaborated on GPS projects in California, Nevada and Nicaragua before I started my PhD in the fall of 2000.

My current research interests revolve around plate boundary zones and the integration of geologic and geophysical data to solve geodynamic problems. Specifically, I use GPS to observe changes in the earth's surface across active faults, fault systems and on active volcanoes. I incorporate these data and geologic and geophysical observations in models to better understand the processes behind lithospheric deformation. I currently have ongoing research projects in Iceland, Central America, western U.S., and Ecuador.

When not exploring what is over that next hill or staring at my computer monitor, I enjoy ultimate Frisbee, yoga and scuba diving.

Matthew Fantle



I was born in Toledo, where I spent the first 12 years of my life. At age 12, I moved to the Wash-

ington, D.C. metropolitan area, where I remained until enrolling at Dartmouth in 1993. Intending to be an environmental engineer, I enrolled in an introductory earth science class, taught by Prof. Half Zantop, and promptly changed my major to Environmental Earth Sciences. A term on the Stretch, Dartmouth's off-campus field program, solidified the primacy of geology in my life. After graduating in 1997, I worked at the Carnegie Institution's Geophysical Laboratory in Washington for a year. From Carnegie, I headed to UC Berkeley as an NSF

Graduate Fellow. Under the guidance of Donald DePaolo, I established methodology for measuring Fe isotopes by thermal ionization mass spectrometry. My Fe work focused on mass fractionation isotope effects in terrestrial systems due to weathering. I followed up the Fe work with Ca and Sr isotope measurements in marine sedimentary sections, which I used in conjunction with box models and reactive transport models to constrain calcite recrystallization rates, relative weathering fluxes, seawater chemical evolution, and diagenetic isotope effects over the last 45 million years.

Since leaving Berkeley, I have continued working with Ca isotopes and have sought to extend my analytical toolbox to other isotopic systems (such as B and stable Sr). Having been funded recently by NASA's New Investigator Program, I am also using remote sensing research to characterize the surface mineralogy of arid regions. The goals of this work are to understand the processes responsible for the creation of dust-producing regions and to characterize the chemical and isotopic composition of dust.

When I'm not working, I thoroughly enjoy watching (baseball, soccer, college basketball, football) or playing (soccer, tennis, volleyball) sports. I am fascinated with the Civil War, enjoy reading historical non-fiction as well as science fiction, and have recently begun making beer. I have been known to attend (and enjoy) yoga classes and will rarely turn down a chance to hike, climb, or swim. I have a great family, wife Maureen and dog Nugget, whom I enjoy the company of immensely.

Researchers Develop GIS Database for Egypt Site

Continued from page 1

Strategies to mitigate the effects of rising groundwater and capillary water are being developed, based on the characterization of the groundwater regime at Hierakonpolis. A comprehensive GIS database has been developed that contains the very large body of diverse observations made during the past 9 years at and around the Hierakonpolis site. This database greatly facilitates the analysis and interpretation of integrated data sets as well as the display of all data and results.

Each year undergraduate and graduate students have participated in the work at Hierakonpolis, resulting in 3 M.S. and 11 B.S. theses at Penn State. Investigators from Egypt and other U.S. and international organizations also have regularly participated. Penn State researchers have presented talks at national and international meetings and have published in peer-reviewed journals and conference proceedings, addressing different aspects of this multidisciplinary effort.



Dick Parizek (at right) drilling well at Hierakonpolis

Undergraduate Studies Fossil Leaves



Undergraduate Student Dan Danehy

Fossils serve as a small window that allow paleontologists, and in my case an aspiring paleontologist, to gaze into past environments and ecosystems. However, these fossils must be placed within a stratigraphic framework, or its age of deposition with respect to geologic time, in order to analyze any changes within the

paleoecology (for example, migration of new plant or animal taxa, extension of terrestrial biomes into higher latitudes etc.). For my senior thesis project and with the help of my advisor, Dr. Peter Wilf, I examined early Eocene (~55 Ma) fossil leaf flora collected from a fossil-rich locality in Meridian, Mississippi, known as the Red Hot Truck Stop (RHTS). The RHTS is significant because it is the only locality from the Gulf Coast that contains preserved fossil pollen, leaves, mammals, fruit, and nannoplankton near the Paleocene Eocene Thermal Maximum (PETM), a period of very rapid and intense global warming. 113 leaf specimens were analyzed and placed into 20 discreet morphological groups, or morphotypes, based on similarities in leaf form and venation. Six of the morphotypes were identified to their family level (Sapotaceae, Myrtaceae, Arecaceae, Fabaceae, Anacardiaceae and Lauraceae), and two morphotypes were identified to their genus level (*Platycarya* and *Lygodium*). The mod-

ern distribution of these leaves suggests that the paleoclimate of Mississippi, and the Gulf Coast, at this time period was tropical to sub-tropical. Also, the presence of certain leaf taxa (*Lygodium* and *Platycarya*) confirms a wide range for these plant taxa during the Eocene, because they have also been found in the Rocky Mountain region at the same time period.

For the summer of 2006, I was selected as a paleobotany intern for the Denver Museum of Nature & Science. I worked as part of a team collecting hundreds of late Cretaceous and early Paleocene (~68-62 Ma) fossil leaves throughout the Denver basin and compared them to one another, correlated different leaf localities and outcrops to geologic time, and worked on a large mapping project south of Denver, in Colorado Springs, to locate leaf localities, coal seams, fossil mammal and/or dinosaur bones, and to locate the Cretaceous/Paleocene (K/T) and local formation boundaries.

Department of Geosciences Partners With Fort Valley State University

The Department of Geosciences and the Cooperative Developmental Energy Program (CDEP) at Fort Valley State University (FVSU) have formally approved a 3+2 degree program. Students in the program conduct three years of coursework with an emphasis on chemistry or math at FVSU, then transfer to Penn State University Park (UP) for two years of coursework with an emphasis on geosciences. At the end of the two years, students graduate with two B.S. degrees, one from FVSU in Chemistry/Math, and one from PSU in Geosciences. The first group of FVSU students arrived at UP in Fall 2006.



FVSU students visit Beaver Stadium, March 2006

the University of Oklahoma and the University of Texas at Austin. In addition to Dr. Crumbly, the program is served by long-term administrator, Jackie Hodges and Geoscience Professor, Dr. Aditya Kar, a petrologist by training who received his PhD from the University of Oklahoma. The dual-degree programs have a remarkable track record of educating

highly-successful minority petroleum geoscientists and engineers.

The PSU part of the dual degree program has already solicited generous funding from the petroleum industry.



FVSU students on field trip in PA, March 2006

Science and engineering. Professor Isaac Crumbly (now a Vice President at FVSU) founded the Cooperative Developmental Energy Program at FVSU in Georgia in 1983. CDEP's objective is to develop a long-term, mutually-beneficial, relationship between FVSU and the nation's energy industry to create a technology-oriented labor base for minorities and women. Two key components of CDEP are dual-degree programs in engineering, geosciences, and health physics and the Math Science and Engineering Academy (MSEA), a pipeline program to recruit and retain talented students. CDEP has existing dual-degree Earth Science programs with

Atlanta) has a national reputation for educating some of the brightest minority students in Earth

The first three dual-degree students to arrive at UP are LaMichelle Arnold, a Math graduate from Hayward, CA; Enrique Perez, a Math major from Washington, GA; and Leon Smith, a Chemistry major from Warner Robbins, GA. Our long-term plan is to recruit students from Pennsylvania and elsewhere to the FVSU-PSU dual-degree program. We are working with the Penn

State Upward Bound Math and Science Program, which brings highly talented minority students to UP for summer research and education programs.

Our goal is to provide research "bridge" programs at UP for the dual-degree students in the summers prior to their transfer to Penn State. Penn State Geosciences is delighted to be collaborating with the prestigious Fort Valley State University-CDEP program.



FVSU students and faculty with Geosciences faculty, February 2006

Faculty Honors and Awards

Richard Alley, Evan Pugh Professor, won two major international awards in 2006. Alley was awarded the **Louis Agassiz Medal** by the European Geosciences Union. This appropriately named medal is awarded for outstanding scientific contribution to the study of the cryosphere on Earth or elsewhere in the solar system. The fact that Richard was selected as the first recipient is a tremendous honor to him.



Alley was also named as the awardee of the International Glaciological Society's **Seligman Crystal** for his prodigious contribution to our understanding of the stability of the ice sheets and glaciers of Antarctica and Greenland, and of erosion and sedimentation by this moving ice. Through the interpretation of paleoclimatic records from ice cores, Alley has examined their response to past and future climate change. He has provided evidence that large, abrupt global climate changes have occurred repeatedly in the Earth's history and has shed light on the driving mechanisms of these changes.



Tanya Furman, Professor of Geosciences, is a recipient of the **2005 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring**--a program supported and administered by the National Science Foundation. The award includes a \$10,000 grant for continued mentoring work. Furman has worked to identify best practices for organizations wishing to develop mentoring programs in science, technology, engineering and mathematics (STEM). She has developed an innovative series of programs that promise a substantial effect on increasing underrepresented students considering STEM-based career opportunities, and she has built collaborative relationships at other academic institutions that now use her programs.

The David and Lucile Packard Foundation named 16 new promising scientific researchers as 2005 recipients of **Packard Fellowships for Science and Engineering**. Among this elite group of researchers was **Peter Wilf**, Assistant Professor of Geosciences and John T. Ryan, Jr. Faculty Fellow. Dr. Wilf received an unrestricted research grant for his studies of plant and insect evolution from the fossil record. His research uses the morphology of fossil leaves to interpret changes in climate back through time. Wilf has also made a name for himself for calibrating modern leaf morphology to climatic data as well as in the interpretation of insect damage of leaves. His field areas include the Bighorn Basin of Wyoming and Patagonia.



Faculty Honors and Awards



Wilson Award for Outstanding Service

Richard Parizek, Professor of Geosciences has a distinguished 45-year career. He has taught Geoscience 452: *Introduction to Hydrogeology* every year since 1961, the longest-running instructorship at the University. Even more remarkable is Parizek's unprecedented graduation of ninety-nine graduate students under his tutelage. This small army of hydrogeology students now occupies a diverse array of leadership positions in government, academe, and the private domain. The magnitude of his legacy at Penn State can also be measured by the fact that the hydrogeology program was ranked fifth in the country by *US News and World Report* in 1999, with Parizek being the sole professor in this area. One of the most prestigious of his service roles has been his recent membership on the U.S. Nuclear Waste Technical Review Board, including serving as Chair of the Natural Systems Panel.

Faculty Mentoring Award in Earth & Mineral Sciences

Peter Heaney, Professor of Geosciences, recently finished a long term on the Geosciences Undergraduate Program Committee where he served as the representative for the Honors Program. Peter is a highly conscientious advisor, extremely patient and caring. He is a great listener and is very generous with his time. Peter is also recognized for his valuable advice and direction while serving as departmental ombudsman. Incidentally, Peter was also recently named a Fellow of the Geological Society of America!



George W. Atherton Award for Excellence in Teaching

Laura Guertin, Assistant Professor of Geosciences at Penn State Delaware County, was awarded the prestigious Atherton Award for Excellence in Teaching. Guertin has a system wide reputation as a superb educator, and she has won national acclaim for her innovative advances in geoscience pedagogy. Among Guertin's many well-known contributions are the use of Palm Pilots in introductory laboratory exercises and her curricula that take advantage of an urban setting in educating students about earth and environmental science.

Student Awards and Honors

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

38th Annual Graduate Student Symposium



Christina Lopano, First Prize Award
Oral Presentation by a PhD Student
(Post-comprehensive Exam)

James Moran: Second Prize Award
Oral Presentation by a PhD Student
(Post-comprehensive Exam)



Aubrey Adams: First Prize Award
Oral Presentation by a PhD Student
(Pre-Comprehensive Exam)



Daniel Hummer: Second Prize Award
Oral Presentation by a PhD Student
(Pre-Comprehensive Exam)

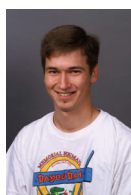


Doug Edmonds: First Prize Award Oral
Presentation by an MS Student

Courtney Johnson: Second Prize Award
Oral Presentation by an MS Student



Audrey Hucks: First Prize Award Petro-
leum Industry Related Oral Presentation



Leo Peters: Second Prize Award Petro-
leum Industry Related Oral Presentation



Minoo Kosarian: First Prize Award
Poster Presentation

Gavin Hayes: Second Prize Award
Poster Presentation



Other Graduate Awards

American Geophysical Union Outstanding Student Paper Awards: **Bryn Kimball and Derek Sawyer**

University Graduate Exhibition, 3rd Place Physical Sciences & Mathematics: **Gavin Hayes**

Richard R. Parizek Graduate Fellowship: **Ellen Herman and Geoffrey Moret**

Bunton-Waller Graduate Award: **Jennifer Williams**

University Graduate Fellowship: **Patrick Applegate**

Anne C. Wilson Graduate Student Research Award: **Timothy Fischer, Aaron Regberg, Katherine Dawson**

Marathon Alumni Centennial Graduate Fellowship: **Alexander McKiernan**

Arnulf I. Muan Graduate Fellowship: **Kideok Kwon**

ExxonMobil Fellowship: **Huw Horgan and Sean Culkin**

University Alumni Association Dissertation Award: **Tyrone Rooney**

Hiroshi and Koya Ohmoto Graduate Fellowship in Geosciences: **Elisabeth Hausrath and Aubrey L. Zerkle**

The Richard R. Parizek Field Geology Endowment

To pay tribute to the dedication of their former advisor, a group of Dick Parizek's former advisees have established a new endowment to honor his many years of service to his students. The *Richard R. Parizek Endowment for Field Study in Geosciences* will provide funds to support a wide array of field-study opportunities for undergraduate and graduate students, while honoring one of EMS's most distinguished professors.

Hands-on field experience is as necessary as the classroom for training students to think analytically in solving geologic problems. Environmental consulting firms, oil companies, and federal agencies often expect that new graduates will have had field experiences during their time at Penn State. The Department of Geosciences places a top priority on ensuring relevant field study opportunities for students. This endowment will help us make great strides in ensuring that every student who wants to participate in these opportunities has the financial resources available to do so.

We are delighted to announce an anonymous \$134,000 donation to establish the Richard Parizek Field Geology Endowment. The fund will fully support our undergraduate Geobiology field trip to the Denver area in April 2007.

Undergraduate Student Awards

The Robert F. Schmalz Award in the Department of Geosciences: **Joel Christine, Laurie Eccles**

The James and Nancy Hedberg Scholarship in Geosciences: **Amy Costenbader, Timothy Didlake, Poonam Giri, Erin Todd, Sara Yerger**

The Joseph Berg Award for Undergraduate Research in Geosciences: **Daniel Danehy, Ian Johnson, Kevin Rega**

The Ronald A. Landon Endowment in Hydrogeology: **Andrew Stearns, Joseph Swearman**

The Barton P. Cahir Award Endowment in Earth and Mineral Sciences: **Timothy Didlake**

The Arthur P. Honess Memorial Fund: **Ronald Capurso, Robert Hegemann, Katherine Hinkel, William Koch, Kathleen McGuire, Eriks Perkons, Rachel Shaak**

The Benjamin F. Howell, Jr. Award in Geosciences: **Ryan Modrak, Abbey Rhode, Jason Wilcox**

The Frank Dachille Memorial Award in Geochemistry: **William Rouse**

The Chevron Undergraduate Diversity Scholarship: **LaMichelle Arnold, Enrique Perez, Leon Smith**

Twelve students participating in the Summer 2006 Geosciences Field Camp received awards from the following funds:

Thomas F. Bates Undergraduate Research Enhancement Fund

David P. Duff Gold Undergraduate Scholarship Fund in Geosciences

Kappmeyer-Isaacs Field Camp Award

Earl S. Lenker Fund for Field Studies in Geosciences

Edwin L. Drake Memorial Scholarship

David M. Demshur Undergraduate Research Endowment in Geosciences

Reif Undergraduate Summer Field Camp Endowment

We appreciate the generosity of the many contributors who make these funds possible.

Geosciences Field Camp, 1914-2006

New Website Archives Photos and Anecdotes Maintained by Professor Dave Egger

The web site contains excellent photographs of field camp from 1914 to 2006. Many of the more recent photos were obtained from individual students as well as Duff Gold, Barry Voight, Rudy Slingerland, Derrill Kerrick and Kevin (Doc) Hoover. If you have any photos that you would like to contribute to make your field-camp year more complete, please send them to Dave Egger (eggler@geosc.psu.edu). Dave also will scan originals and send them back to you if you mail them to him at the Department of Geosciences. Check out the website:

http://www.geosc.psu.edu/alumni/field_camp/index.htm

To give you a taste for the website, the photos on the page are from field camp in 1965, 1971, 1986, 1991, and 2004. Can you guess which is which (answers given bottom of p. 15)?



Graduate Student Research



**Audrey Hucks,
PhD student**

At subduction zones, one tectonic plate subducts under another, and the off-scraped, fluid-rich sediment is accreted into a prism. As sediments accrete, they deform like soil in front of a bulldozer. I use in-situ pore pressure monitoring data from the Nankai Trough (offshore Japan) to study the pore pressures in an actively deforming subduction zone. This pressure-monitoring research is important to understanding the generation of the Nankai Trough's frequent earthquakes.

Monitoring pressure changes in an actively deforming submarine setting presents a unique geotechnical chal-

lenge. To meet that challenge, two hydrologic monitoring stations called "ACORKs" were installed in Ocean Drilling Program boreholes in the Nankai Trough in 2002. The four years of ACORK data contain large pressure pulses ("transients") and long-term changes that may be deformation-related. The data also include sinusoidal pressure changes due to tides. The tidal pressure responses in less permeable stratigraphic intervals have small amplitudes and lag pressure changes at the seafloor. The compressible ACORK instrument apparently attenuates or "filters" pressure changes in less-permeable formations.

To describe this behavior, I have developed a mathematical model for ACORK instrument response to formation pressure changes. I will test my model at sea this summer during

an expedition to the Nankai Trough. I will conduct hydrologic "slug" tests at the ACORKs in order to estimate instrument and formation properties. With my model and estimates of ACORK and formation properties, I can determine the ACORK filter effect for all recorded frequencies. I can then apply my filter functions to pressure transients in the ACORK data to determine pressure changes in the formation and the strains that produced them.

I appreciate the interdisciplinary aspect of my work and the opportunities to develop quantitative models and then test them in the field. I hope my research will contribute to a sound interpretation of unique pressure records and to the design of increasingly appropriate pressure-monitoring instruments for low-permeability marine sediments.



**Christina Lopano
PhD Student**

If you have ever dug a hole in your backyard and found black, fine-grained minerals speckled across the dirt and clay, then you have encountered manganese oxides. These nano-sized, poorly crystalline minerals are ubiquitous in most soil environments as coatings or varnishes, and are some of the most reactive constituents found in soils. Birnessite, the most common of these Mn oxides, is very fine grained, with large surface areas, and it readily participates in cation exchange and redox reactions. The unusually high adsorption capacities and scavenging capabilities of Mn oxide/hydroxide minerals make them a control of heavy metal mobility in soils and waters.

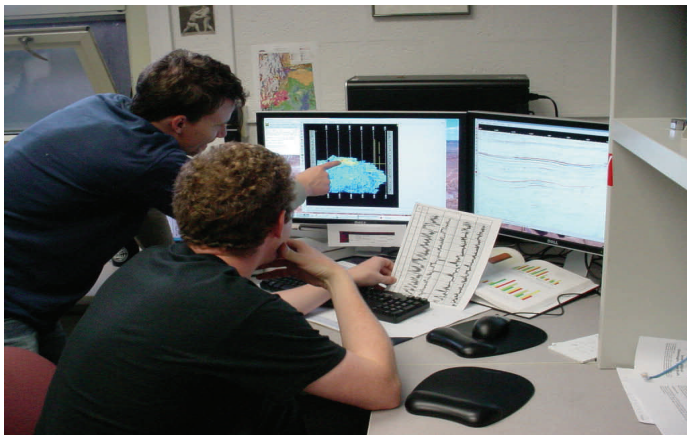
My dissertation research focuses on developing novel methods for understanding how nanoparticulate Mn-oxides fundamentally contribute to the remediation of groundwater solutions polluted with toxic metals. Despite the importance of birnessite and similar phases, the same fine-grained texture that makes it so reactive also makes its crystal structure difficult to study. I have applied synchrotron X-ray diffraction to study real-time cation exchange reactions of the Mn-oxide birnessite. The synchrotron is an invaluable resource for X-ray powder diffraction; it offers improved resolution, counting statistics, and dynamic range relative to conventional, laboratory-based data, so that it is possible to get crystal structure information from fine-grained powder samples such as birnessite.

I have conducted my experiments at the National Synchrotron Light Source (NSLS) at the Brookhaven National Lab. I monitored the exchange of aqueous cations for interlayer Na^+ in synthetic birnessite using a simple flow-through cell via time-resolved synchrotron X-ray powder diffraction. My work has provided the first continuous record of Mn oxide structural change at the atomic scale in response to cation substitution; it reveals that cation exchange in birnessite occurs in a geologic instant. Exchange is complete within minutes to hours, depending on solution concentration, and my structural analyses have mapped the changing atomic positions in the interlayer in an uninterrupted time sequence. In addition to providing profound mechanistic insight into the reaction, this analysis also offers the first quantitative cation-exchange kinetic data for the birnessite system.

Petroleum Geosystems Initiative and Allied Research in Geofluids

Contributed by Peter Flemings and Christine Rosenhoover

The 4th Penn State Petroleum GeoSystems Team joined Penn State this fall. “Spike” Bohn (Colorado State) and Matt Reilly (Durham University, U.K.) are the team’s geologists. Joe Valenti (Univ. of Toronto) is



Geosystems students work on Auger Field

our geophysicist and Doruk Seren (Penn State) and Lucas Luginbuhl (Marietta College) are the team’s petroleum engineers. Team members are pursuing both a team-based study and individual research projects based on Shell’s Auger Field in the deepwater Gulf of Mexico. They have spent the fall examining production and log data and are now mapping across the Auger mini-basin using seismic and log data. The complicated turbidite reservoirs, the remarkable production history, and the extraordinary salt tectonics at Auger promise an exciting project. To support the Initiative, Shell and Chevron each provide two generous fellowships and Shell provides an extraordinary data set. Penn State alumni play a critical role in the Initiative by donating their time and through the Heller Petroleum GeoSystems Endowment Fund, the Kent and Helen Newsham Petroleum GeoSystems Endowment Fund, and the Petroleum GeoSystems Enrichment Fund. This generous effort has supported ten students to the completion of their Masters Degrees in the GeoSystems Initiative.

Peter Flemings (Geosciences) and Turgay Ertekin (Petroleum Engineering) co-direct the Initiative, which links the Department of Energy and GeoEnvironmental Engineering (EGEE), the Department of Geosciences, and corporate partners. Students are sponsored by industry and formed into research teams focused on applied industry problems. The Initiative recognizes that fundamental research problems lie at the interface of

Geosciences and Petroleum Engineering and that interdisciplinary scientists trained in problem-based collaborative research will be tomorrow's industry leaders.

The G3 Center: Geomechanics, Geofluids, and Geohazards

In collaboration with EGEE, the department has recognized a growing collaborative and multidisciplinary effort in rock and fluid physics through the creation of the Center for Geomechanics, Geofluids, and Geohazards (G3). Research areas include earthquake nucleation and recurrence, the triggering and timing of volcanic eruptions, the dynamics of ice sheets, the fate and transport of contaminants in groundwater, and the generation of submarine landslides. All of these processes are influenced by the interaction of rocks and fluids. Understanding these relationships is a key component of our ability to predict natural disasters, protect and recover potable water, and to provide safe storage and long-term stewardship of related industrial products and wastes. G3 integrates activities in rock and fluid physics through laboratory experimentation, field observation, and theoretical analysis. Faculty members involved are Peter Flemings, Chris Marone, Demian Saffer, Kamini Singha, and Derek Ellsworth (EGEE).



L-R: Bob Jefferis (Venture Manager EPAmericas for Shell and 1980 Penn State MS Geology) Sue Waters (Manager of Drilling Operations and Sub-surface support for Shell, and 1981 Penn State MS Geology graduate), Petroleum Geosystems team and Professor Peter Flemings (at right).

The New EMS Museum

Contributed by Russell Graham, EMS Museum Director

As the museum transforms into its new morph, we must say goodbye to the old one. The gallery in Steidle has been closed. In addition, we have removed specimens from the exhibit cases in the halls of the Steidle building. Unfortunately, we cannot exhibit all of the collections in the new space, and, therefore, we are in the process of developing a new facility – the EMS Museum Research, Collections and Educational Center. The new facility is scheduled to open this summer, and, for now, the collections are securely packed and stored in the old exhibit gallery.

There are big plans for the new museum. Because we cannot exhibit all of our specimens, the exhibits in the new museum will be periodically changed. This will allow for more specimens to be shown through time and also provide new exhibits

for our visitors. Currently, the Art and Mineral Gallery has a selection of 25 pieces of art (paintings, drawings, and sculptures) on exhibit. This show highlights the many themes around which Dean Edward Steidle amassed the collection. In the future, we will focus on specific themes (e.g., mineral extraction, transportation, processing,). The art collection has an important historical component to it, since a lot of it was a product of the Works Progress Administration during the Depression of the 1930s. As a result, we are loaning pieces of art to other museums for special shows. The museum continues to add to the collection through donations.

The mineral exhibits in the gallery will focus not only on the beauty and aesthetics of minerals, but it also will highlight the science of mineralogy and the uses of mineral resources for society. Currently, the mineral exhibit focuses on two different processes (incorporation of minerals within minerals and atomic substitutions) that cause color in minerals. Future exhibits might involve topics such as the physical and chemical properties of minerals, medical

uses for minerals, mineral resources in society, gem stones, etc. The museum maintains a strong relationship with the Nittany Mineralogical Society.

In our other gallery, temporary exhibits have been installed by the EMS Museum staff. Currently, EMS scientists and museum staff are creating an exhibit on seismology and the structure of the Earth. Computer screens display seismic readings at 15-minute and 24-hour intervals

from our seismometer in the basement of Deike. A touch screen is available for visitors to learn more about earthquakes, seismology and the structure of Earth. In addition, a computer screen displays output from a pressure gauge that allows visitors to create their own earthquake. Graphic displays discuss and illustrate the destructive aspects of earthquakes, but also explain how seismic waves reveal information about the deep structure of our earth. Supplemental information on plate tectonics illustrate why earthquakes occur where they do.

The museum also has acquired a Geowall which was obtained from an NSF grant to the Earth and Environmental Sciences Institute for the development of the Center for Environmental Kinetic Analysis. A Geowall is a projection system that allows for three-dimensional viewing of data, objects, and landscapes at any scale. In the future, new interactive exhibits will include the Geowall. In fact, three-dimensional images of subduction zones can be viewed and manipulated to demonstrate the actual boundaries of plates. These images will enhance

the seismology exhibit. Several new exhibits have just opened in the museum. One exhibit focuses on undergraduate research and will be a revolving exhibit in the future. Currently, the exhibit illustrates the results of two senior theses in Geosciences. Melissa Pardi completed a thesis on the taphonomy of two excavation levels from a late Holocene cave deposit from the Black Hills of South Dakota. The other thesis was done by Jacob McCartney on the paleoenvironmental implications of Paleozoic bryozoans.



Continued on next page

Museum Plans New Exhibits

Continued from previous page

Another small exhibit focuses on global climate change and the potential for the melting of ice sheets on Greenland and Antarctica. This exhibit also shows the sea-level rise that could result from this melting and its effects on low coastal areas around the world, but especially in Florida and the east coast of the US. These low areas are some of the most densely populated areas in the world. There is an accompanying component of this exhibit on Geowall that provides a three-dimensional view of these changes.

The museum also has a traveling exhibit from the Carnegie Institution in Washington that focuses on astrobiology and life around deep-sea volcanic vents. Coming attractions include a new exhibit in the Art and Mineral gallery that will focus on "Men at Work."

The museum is working with a committee of scientists and other staff to plan new exhibits that will be integrated and show the diverse areas of research throughout the college. The central theme for these exhibits is the scientific process, or, in other words, how does science work? Some of these exhibits will be constructed by museum staff and others will be contracted to professional exhibit companies. The exhibits will not only be interactive, but they will serve as focal points for programming for school-group visits.



State standards for the different disciplines (e.g., earth sciences, geography, etc.) will be used in formulating the programs. Museum staff will work with school teachers to develop grade-appropriate curricula that will be available on the museum

web page. Teachers will be able to have their students view a pre-visit introduction to the museum on the web page, use the curricula during their visit, and then follow up with activities and references (books and other web pages) on the web page when the students get back to their schools. Eventually, the museum hopes to train EMS students as docents who will facilitate school group tours.

The web offers many unique opportunities for exhibition and educational programming. As discussed above, the museum web page can be used to enhance the on-the-floor



exhibits in the museum, especially for teachers and school children. On the other hand, the museum can exhibit and explain materials on the web in ways that are not possible in the museum itself. Also, on-line exhibits will allow visitors to enjoy specimens and educational opportunities in their own residence at times convenient to them. However, there is nothing like the actual specimens that are viewed at the museum!

The museum will continue to expand its collections, but, like all other museums, storage space is not infinite. To this end, the museum must develop guidelines for collection growth. Some of these guidelines are specified in a new Collection Policy Manual. However, the museum plans to also focus on research collections and items important in the history of the college. The museum has worked out a joint relationship with the Pattee-Paterno library to serve as our archive.

These plans are ambitious, and they will not happen over night. However, I am extremely excited about the potential we have for serving the university community as well as the broader community throughout central Pennsylvania. If you would like more information on the museum, please feel free to contact me at rgraham@ems.psu.edu.

We hope that you will visit the museum frequently when you have the opportunity and please watch future newsletters for an announcement about a Friends Organization for the EMS Museum.

Answers to field camp photographs (from p. 11):

Top left-1965 (Barry Voight back row, second from left). Top right-2004 (Dave Egglar at center). Center-1971 (Duff Gold and Family at right). Bottom left-1986 (Dave Egglar at center). Bottom right-1991 (Duff Gold front right).

Your GEMS Representatives: Rick Abegg and Reg Spiller

The Graduates of Earth and Mineral Sciences (GEMS) Alumni Constituent Society has a Board of Directors whose mission is to assist and promote Penn State and EMS (visit <http://www.ems.psu.edu/alumni/index.html> to learn more). Board activities center around four committees: Events, Outreach, Resource, and Student/Faculty Interaction. The Events Committee plans the GEMS Seminar Series. The purpose of the GEMS Seminar Series is to showcase the individual departments within EMS and promote general awareness of the unique disciplines found within the College. By doing so, the symposium is meant to recruit students from outside the College as well as to provide options for those thinking of changing majors within the College; promote interaction and networking between alumni, pro-

fessionals, faculty, and students; and underscore the importance of the business aspect of the discipline to society. The seminars are held every other year and focus on one department within EMS. The Outreach Committee is charged with helping alumni reach out to potential, current, and past EMS students. The Resource Committee is responsible for the selection of board members (elected by Board Members or by a vote of all GEMS members) and for the selection of GEMS Alumni Achievement award winners. (We're always looking for worthy candidates.) The Faculty/Student Interaction Committee promotes and enhances relations with alumni, students, and faculty of EMS.

The GEMS Board of Directors has two Geosciences' representatives. Board members currently are

working with the department on the upcoming GEMS Seminar Series on groundwater and environmental geosciences to be held in September 2007. Recent board activities include presentations to undergraduates on careers in geosciences and participation in a letter-writing campaign to prospective students who have been accepted into the College of Earth and Mineral Sciences.

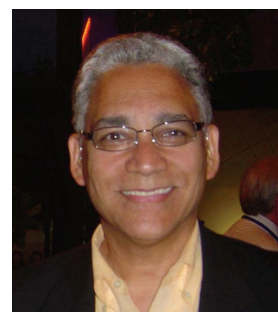
Board members can serve up to two consecutive 3-year terms. Please contact gems@ems.psu.edu if you know of energetic and motivated volunteers who would be interested in joining the board. The Geoscience representatives on the GEMS Board of Directors are returning member, Rick Abegg and new member, Reg Spiller. Following are profiles of Rick and Reg.



Rick Abegg has worked for Chevron for 15 years, currently as a Staff Geologist in Houston, Texas. He presently works as an exploration geologist for the Gulf of Mexico (GOM) Deepwater Exploration/Projects Strategic Business Unit. Rick was the exploration geologist for

the recently announced Big Foot Discovery, and he was a corporate instructor for Chevron's field course to the Brushy Canyon Formation in West Texas. Prior assignments included GOM Shelf Exploration and Permian Basin Development Geologist, and he recruited for Chevron at both Penn State and Kansas for seven years. Rick received a BS in Earth Science from Penn State in 1983, an MS in Geology from Southern Illinois University, and a PhD in Geology from the University of Kansas.

Reg Spiller received his MS in Geology in 1979. He is Executive VP of Frontera Resources, an international exploration and production company. He currently is a member of the National Academy of Science, with membership on the Energy Resource Board. He is a founding member of the National Association of Black Geologists and Geophysicists, an organization that is in partnership with AAPG, promoting earth sciences through mentoring and scholarship to minority and female students. Prior to the founding of Frontera, Reg was the Deputy Assistant Secretary for Gas and Oil at the US Department of Energy. He managed all oil and gas research and development for the US government. Reg has worked extensively in over 50 countries for both major and independent oil and gas companies. He maintains a high technical standard of excellence, with an eye for promoting the earth sciences to our community. Reg's son, Harrison is a major in the department.



Alumni News

(editor's note: correspondence received from our alumni in Summer 2006)

Keith Saroka, – BS Earth Science and SECED (Secondary Education) class of 1993. Married (Susan SECED class of 1993) with 3 children. Recently finished 13th year of teaching middle school science at Tinicum School in Essington, PA. I am the Interboro School District Subject Area Coordinator for Middle School Science. Since leaving PSU, I have earned an M.A. in Physical Science from West Chester University, and racked up about 70 total graduate credits in both Education and Science over the years, including about 16 or 18 credits through the PA Space Grant Consortium at University Park.

Alex Pavlov – M.S. Meteorology, 2001; Ph.D. Geosciences 2001. I have a junior faculty position at the (LPL) University of Arizona Tucson about 4 months ago. Great place but heat is way too much - that's my real world experience. Go PSU!

Jeff Marshall – Ph.D. Geosciences, 2000. Received tenure and was promoted to Associate Professor in the Geological Sciences Department at Cal Poly Pomona University in southern California. He will be doing field work on Costa Rica's Nicoya Peninsula for part of his sabbatical.

Karen McLaughlin – B.S. Geosciences, 1999. I recently earned my Ph.D. in Geological and Environmental Sciences at Stanford University and got married to fellow Penn State Alumni Steve Allison (B.S. Biology, Class of '99). We are now both Post Docs at the University of California, Irvine.

Emil Onuschak, Jr. – B.S. Geology & Mineralogy, 1958. After 17+ years overseeing cleanup of leaking underground storage tanks in Delaware, I recently retired from the Department of Natural Resources, thus concluding a 45-year (more or less) career as a Penn State geologist for a variety of companies and organizations.

Dennis Maiorino – B.S. Geological Sciences, 1978. I am currently working as the project geologist for the largest horizontal water flood in the U.S. I have been drilling in the Williston Basin since March 2001, keeping 4 drilling rigs constantly busy. The water flood project consists of 102 square miles and is located in North Dakota approximately 22 miles southeast of Baker, Montana. It has been a very geologically intensive project and I thoroughly enjoy working with the various team members in the field as well as the office. I have drilled over 200 horizontal wells inside the unit with an average depth of 15,000' MD. Production from this unit has increased from 6,000 BOPD in March 2001 to over 40,000 BOPD currently. Talk about taking advantage of the surge in oil prices, the timing could not have been better! The biggest change has come by way of my employer. In April of this year, Burlington Resources was acquired by Conoco-Phillips. My duties have not changed and I am still working out of the Midland office.

Eric Hazlinsky – B.S. Geosciences, 2004. Masters candidate in geology at Boston College. Completed first year, was awarded a department grant for summer research and took honorable mention at BC geology colloquium for a presentation of research done while at Penn State. Currently living in Boston and looking into getting a Ph.D. following completion of Masters.

John C. Cook – M.S. Physics, 1947; Ph.D. Geophysics, 1951 I received the PhD in Geophysics from PSU in 1951, so I'm a really OLD graduate, a condominium in Orem, Utah, near my roots and some caring relatives. Been swimming 500 meters twice per week, and occasional hiking in these spectacular mountains (up to 5 miles). In the years since leaving PSU I worked 34 years in applied physics and geophysics (three major inventions) at two southwest firms, then 21 years "retired", mostly renovating rental homes and a son's 20-unit apartment house; I became a locksmith and an expert on refrigerators and air-conditioners. Now working on a salvaged electric scooter for short errands, and planning to convert our Toyota Prius to a plug-in hybrid (100 miles / gallon!). I also teach pre-school and third-grade classes 2 hours/week in the winters. It's been fun. Greetings to any other survivors from my era.

Stanley J. Luft – M.S. Geology, 1951. Thanks for asking, but I've been away from geology since retiring from USGS in September 1988. The closest I get to geologizing is gazing at outcrops when driving and observing structures while flying. I continue to feed my passion for philately: well-regarded and rewarded exhibitor, accredited national-level judge, writer for a number of journals, editor of (and principal author for) the *France & Colonies Philatelist* since the early 1990s, and active worker for over 25 years for the national-level Denver stamp show, though now that I'm 78, I have started to slow down just a bit. Eleanor and I have traveled abroad just about annually, mostly to western and southern Europe, plus Morocco and the Western Hemisphere. We live in Golden, Colorado and would like to hear from my long-ago classmates; e-mail's fcpsed@att.net

Attilio Squillario – B.S. Earth Sciences, 1996. After my PSU experience, I spent several years in private consulting before taking my present position as an Assistant Environmental Manager at PennDOT. This position has given me the opportunity to remain within close proximity to the university and to contribute back to the area through our District's numerous bike trail, streetscape and transportation related projects within the Centre Region.

Jim White – B.S. Geosciences, 1981. I am currently President, Quantum Geophysical in Houston, TX. We have operations all over North America and are enjoying the resurgence of demand for seismic acquisition services. I was recently President & CEO, Trace Energy Services, LTD. In Calgary, Canada until we were bought in Dec., 2005 and prior to that I was with Western Geophysical (now WesternGeco) for over 25 years. As some would know, I worked on seismic field crews over the summer months of my college years and have continued on. The Field Trip Alumni page is great. Brings back many memories (all good !). I am actively recruiting recent college grads so drop me a line if you are interested in a career in seismic. Regards, Whitey

Ira D. Sasowsky, Geology (MS 1988; PhD 1992). I was appointed as co-editor of *Environmental & Engineering Geoscience*, starting July 1, 2006. The journal is jointly published by GSA and the Association of Environmental & Engineering Geologists.

Continued on next page

Friends of Geosciences

The following individuals have given generously to the Department during this past fiscal year (July 1, 2005 - June 30, 2006). Without their thoughtful contributions, we would not be able to recruit, retain and reward outstanding students each year. If you wish to make a contribution to any of the Department's Endowments or Scholarships, please use envelope provided or contact : EMS Office of Development, 116 Deike Building, University Park, PA 16802 telephone 814-863-2289.

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Leonard & Jennifer Gardner	Frank & Carolyn Moorshead	Ming & Qiong Zhao

Alumni News...Continued from p. 17

Ron Landon – B.S. Geochemistry and Mineralogy, 1961; M.S. Geology 1963. Joyce and Ron recently celebrated their 45th wedding anniversary with a renewal of their wedding vows. The festivities were held at "Deep Landing," their summer home in Rock Hall, MD, on the Chesapeake Bay. A large gathering was in attendance including a contingency of Penn Staters which also included Dean Eric and Molly Barron. The usual PSU exuberance was kept within socially acceptable limits!

Kent E. Newsham – B.S. Earth Sciences, 1978. Kent was recently promoted to Manager of Global Petrophysics for Apache Corporation in Houston, Texas. Apache is one of the largest independent producers of oil and gas in the U.S. Kent's core technical area

is Petrophysics, advising for world-wide exploration, development and production activities for Apache. Special areas of interest include unconventional natural gas systems such as tight gas, gas-shale, and coal-bed methane. Mr. Newsham has more than 28 years of industry experience working as a geologist and petrophysicist. He has authored or co-authored dozens of technical papers and key note addresses, many dealing with tight gas sand characterization. Mr. Newsham is a graduate from Pennsylvania State University with a B.S. degree in Earth Science, Geology and a minor in Marine Science. Mr. Newsham is also a graduate of the Amoco Petrophysics Center of Excellence, a masters-based program at Amoco Production Research. Mr. Newsham has established the Newsham Petroleum GeoSystems Endowment in the College of Earth and Mineral Sciences at Penn State under Dr. Peter B. Flemings.

Letter From Interim Dean Rob Crane

Dear Geoscience Alums:

My name is Robert Crane, and I am the Associate Dean for Undergraduate Education in the College. As most of you probably know by now, Eric Barron left the College earlier this year to take on the task of Dean in a new College of Geosciences at the University of Texas, Austin. The appointment came with a \$400 million dollar endowment and the challenge to build one of the leading geoscience programs in the world. That was too much for Eric to resist—so he moved to Texas in July. For the time being, I’m serving as the Interim Dean while the University searches for a permanent replacement. The search is national and is progressing rapidly. The search committee has been collecting nominations and reviewing dossiers, and hopes to conduct interviews in December or immediately after the holidays. The University is anticipating that we will be able to announce a new Dean early in the New Year. We’ll keep you informed as the search progresses.



Meanwhile, the College is not standing still. I thought I would mention a couple of exciting new initiatives. Those of you who were here for Obelisk Weekend, heard me talk about a new *EMS Academy of Scholars*—this idea is beginning to take shape. Faculty from all disciplines across the College are meeting to discuss what this program will look like. At this stage, the consensus is that we should be looking at activities that build problem solving, teamwork and leadership skills, while promoting global competency in a program that integrates across disciplines. The idea is to have ongoing projects that will evolve through the two to four years that students are in the program (depending on when they start at University Park), and projects that will involve seniors and graduate students mentoring freshmen and sophomores. The ideas are still somewhat amorphous, but when the concept is a little more defined, we’ll send a draft out for comment and ask your help in shaping the final program.

Some of you are aware of the College’s initiatives in online professional education. The Department of Geography, in cooperation with the Dutton eEducation Institute, developed a very successful post-baccalaureate certificate program in Geographic Information Science that has transitioned into a Professional Master’s Degree. We reached another milestone recently when we held a “graduation” ceremony for our first graduates in the new on-line weather forecasting certificate program. There are eight students in the cohort that just completed the program, and six of them came to University Park to celebrate (coming from as far away as Missouri and Montreal). Only one has a professional interest in weather, the others were doing this purely for fun. The Department of Geosciences has recently developed an on-line version of the highly successful general education course *Geology of the National Parks* taught by Professors Richard Alley and Sridhar Anandakrishnan. In addition, Professor Eliza Richardson in collaboration with Professor David DiBiase, Director of the Dutton Institute, has initiated the development of a professional Masters of Earth and Environmental Science education. We are excited about all of these activities.

With best wishes,

Rob Crane

Interim Dean

**The Pennsylvania State
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