Welcome to the 2008 Redbeds

The Redbeds is the annual newsletter of the Department of Earth and Planetary Sciences (formerly Geological Sciences) with reports on research, students, awards, funding, and comings and goings. Sent to over 700 alumni, the Redbeds is our primary means of informing alumni, friends, and colleagues of our recent accomplishments. Please write to us and tell us of your activities!

We are Earth and Planetary Sciences!

The Rutgers Board of Governors unanimously approved the changing of the name of our department from Geological Sciences to Earth and Planetary Sciences (EPS) effective 12 Sept. 2007. This name change was needed as Rutgers begins to: 1) plan for a major new building in Earth, Oceans, and Planetary Sciences (EOPS) to be built on the Cook Campus connected to the present Institute of Marine and Coastal Sciences (IMCS); and 2) integrate its resources in Earth, Ocean, and Atmospheric Sciences, the basic components of Earth Systems Science. The name change reflects the broadening of interests in the department, its increasing interdisciplinary, interdepartmental, and inter-decanal ties, and a desire to emulate Geology/Geological Sciences programs at other flagship universities that have broadened their names and missions. This change parallels changes in the names of the decanal units to School of Arts and Sciences (SAS, comprising the former RC, DC, LC, and UC) and the School of Environmental and Biological Sciences (formerly CC). The major and graduate program will still be called Geological Sciences. For more details on this and other exciting changes at Rutgers, see the Chair’s report in this issue.

First Major Donations to EOPS Building

Contributed by Kenneth G. Miller

EPS alumnus Alex Kulpecz (see Biography this issue), made a multi-year pledge of $25,000/annum toward construction of the Earth, Oceans, and Planetary Sciences Building (EOPS). This first major pledge was followed by a $400,000 donation by PSEG. The university has committed $55,000,000 toward the new building to be matched by $10,000,000 in private donations. EOPS will be built adjacent to the Institute of Marine and Coastal Sciences building on the Cook campus. See Chair’s Report for details.

Paul Falkowski Elected to the National Academy of Sciences

Contributed by Kenneth G. Miller and Ken Branson

Paul G. Falkowski, a professor in the Department of Earth and Planetary Sciences of the School of Arts and Sciences (SAS) and the Institute of Marine and Coastal Sciences of the School of Environmental and Biological Sciences (SEBS), was among the 72 new members elected May 1, 2007 to the National Academy of Sciences (NAS), one of the highest honors an American scientist or engineer can achieve. Also elected to this NAS class was Rutgers Professor Hugo K. Dooner, a professor at the Waksman Institute of Microbiology and in the Department of Plant Biology and Pathology, SEBS. The two scientists join a select group of 19 NAS members from Rutgers. Falkowski is the third NAS member in our department, joining Board of Governors Professor Dennis V. Kent and Distinguished Visiting Professor William A. Berggren. Earth and Planetary Sciences currently leads Rutgers with the greatest number of NAS members. Falkowski has gained recognition for his achievements in understanding the photosynthetic processes and evolution of marine phytoplankton, and the role of the ocean in the global biogeochemical cycle.
"I'm extremely honored, and more than a little surprised, at my election to the National Academy of Sciences," Falkowsk said. "I look forward to working with my newfound colleagues in the NAS to serve our national science needs. On a personal level, I will continue to work on understanding the evolution of biogeochemical cycles, and their role in making the world habitable for humans."

Falkowski is an internationally renowned biological oceanographer whose research is directed toward understanding the evolution of biogeochemical cycles. He joined the Rutgers marine science and geology faculties in 1998 after 23 years at the Brookhaven National Laboratory. The co-inventor of a fluorescence-sensing system for studying microscopic marine organisms, Falkowski has authored or co-authored more than 250 papers in peer-reviewed journals and books. Most recently, his paper describing the connection between the increase in oxygen content in the atmosphere and mammalian evolution was published in the journal Science and co-authored by EPS scientists Mimi Katz and Marie-Pierre Aubry. At Rutgers, Falkowski heads the environmental biophysics and molecular ecology program and is the director of the newly established Rutgers University Energy Institute.

In our department, Paul Falkowski has served as a catalyst between IMCS and our faculty, graduate students, and post docs. He was lead proponent on a 4.8 million dollar NSF Biocomplexity grant that involved EPS Professors Ken Miller, Dennis Kent, Jim Wright, Yair Rosenthal, Rob Sherrell, Marie-Pierre Aubry, post-docs Mimi Katz, and graduate students Alicia Kahn and Lesley Patrick. Paul continues to challenge our faculty into spreading their academic wings. For example, he currently is encouraging members of our department to work with engineering and other disciplines in the topic of carbon sequestration, and is building bridges amongst faculty in the departments of EPS, Environmental Sciences (including joint faculty member Nathan Yee), and Ecology, Evolution, and Natural Resources in understanding early life and astrobiogeology. Though classified as a biological oceanographer, Paul’s interdisciplinary approach has proven to be a boon to integration of earth and ocean sciences and we are fortunate to have him as a member of EPS.

Human Origins Research, Olduvai Gorge, Tanzania
Contributed by Gail M. Ashley

Gail Ashley is back at Olduvai Gorge working with archaeologists to try and understand the paleo environment in which early humans evolved. A new project that began summer 2007 is focused on the Zinjanthropus site in Olduvai Gorge discovered by Mary and Louis Leakey in 1959. Called the “nut cracker man” Zinj (now classified as Australopithecus boisei) lived ~1.8 million years ago, had large powerful jaws, and was thought to eat mainly coarse plants and roots. Recent analysis of the artifacts and vertebrate bones associated with the fossil revealed significant cut marks on the bones suggesting systematic scavenging and perhaps hunting as a life style. Paleoenvironmental facies analyses reveal a spring and wetland complex that may have been an attractive food and water resource. Research continues into both the environment and the behavior of early humans.

Exploration of The Giant Hudson Submarine Canyon
Contributed by Peter Rona

Out of sight and out of mind for most, the largest submarine canyon on the Atlantic continental margin of the United States lies at the doorstep of the New Jersey-New York metropolitan area. Hudson Canyon with walls that attain a relief almost as high as the walls of the Grand Canyon, was cut when the Hudson River discharged from the seaward edge of the continental shelf 100 miles from New York harbor during the last glacial maximum some 18,000 years ago, and extends another 300 miles seaward connecting the city with the deep ocean basin. So close, yet so far this canyon is a frontier for ocean exploration. Peter Rona led a cruise of the NOAA ship Ronald H. Brown in 2002, which made the first comprehensive bathymetric map of the Hudson Canyon region from the shelf edge to the seaward edge of the U.S. Exclusive Economic Zone 200 nautical miles offshore with partners from the U.S.G.S. and the Woods Hole Oceanographic Institution. They have published their map: http://pubs.usgs.gov/of/2004/1441/index.html. This past August Peter again served as chief scientist on a cruise of the Ron Brown focusing on the seafloor and water where the head of the canyon indents the edge of the continental shelf to find out why the canyon head appears to be a source that contributes to the support of a regional fishery for lobsters, hake, tilefish and squid. The
Fault Zone Workshop
Contributed by Martha Withjack and Roy Schlische

Martha Withjack and Roy Schlische are co-convening a conference on Fault Zones: Structure, Geomechanics and Fluid Flow to be held 16-18 September 2008, at the Geological Society of London’s Burlington House, home of William Smith’s “Map that Changed the World.” Faults play an important role in accommodating crustal strain. At the largest scale, fault zones control the geometry and evolution of sedimentary basins; at the smallest scale, the development of fault zones changes the mechanical and hydrological properties of rocks. With recent advances in subsurface, modeling (numerical and experimental), and field-based studies, the conference will bring together scientists interested in fault growth, fault-zone properties, fluid-flow, and the mechanics of earthquakes and faulting. Applications include earthquake prediction, groundwater resources, hydrocarbon exploration and production, deep-waste disposal, and greenhouse-gas sequestration. Co-convenors are Christopher Jackson (Imperial College, London), Zoe Shipton (University of Glasgow), Rebecca Lunn (University of Strathclyde), Dan Faulkner (Liverpool University), and Chris Wibberley (Total). Deadline for abstract submission is 16 May 2008.

Rutgers Core Repository Joins IODP
Contributed by Curator James V. Browning

Building on the core repository established by Dick Olsson, the Rutgers Rift-Drift core repository is the brainchild of Ken Miller and Dennis Kent who have been collecting continuous cores drilled over the past 20 years from the mid-Atlantic region. This valuable resource includes continuous cores drilled as a part of ODP Legs 150X and 174X (Upper Cretaceous to Recent) as well as cores drilled by the New Jersey Geological Survey and the U.S.G.S. These cores provided the data set for our reexamination of the rise and fall of sea level over the past 100 million years (Miller et al., 2005, Science). Complementary sets of cores were transferred from the Army Corps of Engineer Passaic River project and from the NSF-funded Newark Basin Coring Project. These cores provided the data set for an astronomically-calibrated geomagnetic polarity time scale for 30 million year years of the Late Triassic and Early Jurassic (Kent and Olsen, 1999, JGR). We united these cores under a theme of Rift-Drift sedimentation to draw researchers to the repository. By bringing together related cores we made one-stop-shopping possible for researchers studying sediments deposited in both rift basin and passive margin drift basin settings.
The NSF Ocean Science Division (OCE) funded the repository for a one-year pilot program (2006-2007) during which we: 1) developed a website http://geology.rutgers.edu/ that includes links to metadata, datasets, and other repositories for ODP Leg 150X and 174AX, plus other onshore cores drilled in the Newark Basin, the Chesapeake Bay Impact Structure, and the Atlantic and Gulf Coastal Plains (ARCO cores); 2) began development of an exhibit for the new Connecticut Science Center; 3) distributed over 1000 samples from Legs 150X and Leg 174AX, in addition to several thousand samples from Expedition 303/306 site survey cores; 4) provided a core exhibit as part of the DOSECC booth at the 2006 GSA and AGU annual meetings; and 5) coordinated and fostered efforts to archive future ICDP cores as part of the IODP.

Our efforts culminated in the repository being officially designated an Integrated Ocean Drilling Program satellite facility, complementing those at Texas A&M, Kochi, Japan, and Bremen, Germany and in the NSF/OCE awarding 3 years of funding (2008-2011) to continue our efforts.

**New Electron Microprobe**

*Contributed by Jerry Delaney*

Jeremy Delaney and Roger Hewins received grants from NASA and support from the University to purchase a new JEOL electron microprobe to replace the aging 20-year old instrument in the RUMrunner facility. The new probe can analyze all elements between B and U at a resolution of one micrometer, or smaller. The probe is a regional facility and serves faculty, students and a number of outside users. Compositional studies conducted on the probe include meteorite and planetary samples, gem stones, volcanics, mantle rocks and sediments and forensic samples. The microprobe will be delivered in January and operating in the spring of 2008.

**Conference on Coastal Response to Threat of Rising Seas & Global Warming**

*Contributed by Michael Kennish and Kenneth G. Miller*

Rising sea level along the New Jersey shore in response to global climate change and coastal subsidence poses a long-term threat to natural systems and community infrastructure. Sea level rise in New Jersey has steadily increased from ~1.5-2.1 mm/yr during the 20th century to ~3-4 mm/yr at present. Best estimates of global sea level rise by 2100 range from ~40-80 cm, although higher rates of melting of the Greenland ice sheet that will likely result in a sea level rise 80 cm or greater. A relative sea level rise of 1 M would remove about a 100-m wide area from the New Jersey beaches. New Jersey is particularly susceptible to sea level rise because of its low coastal elevation. Future impacts will include landward displacement of shorelines along ocean front and bayside areas, continued thinning of barrier islands, flooding and loss of low-lying salt marsh habitat, and greater frequency of coastal zone inundation in response to storm surge activity. Many salt marshes (greater than 30% statewide) will likely be eliminated because of their inability to migrate landward due to obstructions associated with human development such as roadways, houses, and other structures. Rising water temperatures, as well as changes in freshwater runoff and nutrient loading, will lead to altered physical mixing and chemical regimes of coastal bays and estuaries causing major shifts in the biotic community composition and abundance. While beach replenishment and seawall construction could temporarily stave off some of the aforementioned impacts along ocean beaches, low-lying bay shorelines, adjoining wetlands, and nearby coastal communities will remain highly vulnerable to the effects of rising sea level.

To address these concerns, Rutgers organized a coastal working group chaired by Ken Miller and Mike Kennish as part of the University-wide climate initiative. The working group organized a Mini-symposium on Monday May 14, 2007 in Wright Chemistry Auditorium, Busch, to outline the effects of global warming and sea-level rise on the shore. We focused on the scientific questions and the New York Bight region, but our discussions included a global view of the impact on coastal communities and consider the social, ethical, and economic realities of the impact. Orin Pilkey graciously agreed to give a keynote presentation on *Global View of Barrier Islands and their Future in a Rising Sea Level?*. He was followed by talks from 6 Rutgers folks:

- Ken Miller, *Sea-Level Change in New Jersey*;
- Norb Psuty, *Coastal Zone Management: How Good is Beach Replenishment?*
- Karl Nordstrom, *The Evolution & Significance of Coastal Dunes & their Restoration*;
- Tony Broccoli, *Prediction of Changes in Storm Frequency and Intensity*;
Field Trip to Costa Rica
Contributed by Naya Sou and Stephanie Bloomer

When asked if we would be interested in going to Costa Rica during our winter break to help with sample collection, we agreed without hesitation. We thought what could be better than spending 10 days in a tropical country doing something different? It was an alternative winter break to us. We spent our days in Costa Rica visiting the wonderful geology and working with countless drill cores. The trip was an eye-opening experience.

On the day of our arrival, we were greeted by the burning heat and the many airport workers lying on the ground, taking siesta. What shocked us most was the traffic. No matter what time of the day, it would always seem like rush hours on the streets of San Jose. We spent the next three days visiting two volcanoes, Poas and Arenal, waterfalls, etc. Unfortunately, the weather was not cooperating so we could not see the volcanoes. We also stopped at various locations to check out some very interesting outcrops. The geology there is very different and to two geology undergraduates, this was an unforgettable experience.

For the remainder of our time in Costa Rica, we worked at an I.C.E. camp, which is the electricity company owned by the people of Costa Rica, helping Pablo Ruiz collect some samples for his Ph.D. project. Pablo took us to Poas on a clear day on our way to work. Standing atop, we can only describe our feelings for the view as unbelievable! The view of the volcano was breathtaking and even the smell of sulfur from the volcano didn’t bother us. Back at the I.C.E camp, we collected samples from drill cores collected by I.C.E. We helped Pablo collect samples for geochemistry, geochronology, and paleomagnetism. We were invited to join a geologist from I.C.E. on a field trip to see a new dam project to provide electricity for the residents. Overall, our work was exciting and fun.

During this trip, we experienced some unfriendly weather, falling trees on the road, scary driving on narrow mountain roads, collapsed bridges, and amazing food. We understand that this trip would not be possible without the following people: Michael Carr, Vadim Levin, Esteban Gazel, Brent Turrin, Pablo Ruiz, and I.C.E personnel. Also, we would like to thank the SAS Office of International Programs, Rutgers Department of Earth and Planetary Sciences, and the National Science Foundation for funding this trip.

Interdepartmental Collaboration in Costa Rica
Contributed by Ian Saginor, Naya Sou, and Michael Carr

“Wake up! There’s something in the room!” It was the middle of the night, but even as my brain struggled to comprehend these words, I knew they were true. I could hear the sound of feet racing across the wooden floor and although the light from the full moon shone through the window, it was impossible to see who or what they belonged to. From the sounds coming from the adjacent room, it was clear others had also been awakened by our mystery guests. For some, there would be no more sleep that night (the rats were firmly in control), so we passed the time taking pictures of the moon and watching the sun rise over an island paradise.

The next morning dozens of students and faculty from Rutgers and the Universidad de Costa Rica (and one very brave lawyer) awoke on an island off the coast of Costa Rica as part of a pre-meeting fieldtrip intended to increase collaboration between the two institutions. With financial assistance from the Steven K. Fox fund, the SAS International Program, and contributions by Rutgers alumni and faculty, the joint fieldtrip was run by Rutgers Department of Earth and Planetary Sciences and the Escuela de Geologia of the Universidad de Costa Rica,
we were able to travel to some of the most spectacular parts of North America: the Santa Elena and Nicoya peninsulas of Costa Rica. Percy Denyer, currently the Director of the Escuela, led the trip with able assistance from current RU grad student Esteban Gazel. RU faculty, Michael Carr and Claude Herzberg helped out when they could and alumna, Lina Patino, now at NSF, provided special help through her understanding of cultures and languages.

This fieldtrip was an opportunity for 6 RU students and 12 seniors at UCR to see some of the least accessible parts of Costa Rica, the Pacific side of the Santa Elena peninsula and the Islas Murcileagos (Bat Islands), which is an accreted oceanic complex on Costa Rica’s Pacific coast. To get there students and faculty piled into two long open boats and set off to explore the peninsula’s coast, a trip that began with a striking outcrop of uplifted turbidites. As we slowly made our way along the coast, we moved out of turbidites and found ourselves staring at tall cliffs of reddish peridotite cut dramatically with dikes. We spent at least an hour marveling at this unique formation, discussing its origin, and vowing to return for future study.

Sunburned and motion sick (two of us at least), we finally arrived at the Islas de Murcilegos, which are uninhabited except for a single person who lives and maintains the research station. It was here that the local wildlife (rats) would gently remind us that they were there first.

On our last night of the trip, the Rutgers group and the Costa Rican group of students and professors had a joint dinner at a restaurant in Montezuma. Our dinner was paella, which is a common dish for the Pacific area of Costa Rica that consists of various species of sea creatures mixed with rice and garnished with pieces of lime. Students and professors from both institutions socialized over dinner about the trip and about future collaborations. A few students from the University of Costa Rica reflected on the wonderful trip and thanked Michael Carr and the Rutgers group for the dinner and for joining them on the trip to explore the geology of the Pacific side of Costa Rica. Dinner ultimately ended when the paella was completely gone and only the pieces of lime were left. We’d like to thank all the organizations that generously provided funds, without which this trip would not have been possible.

**Redbeds: Oxygen, Nitrogen, and the Early Earth**

**Contributed by Linda Godfrey and Paul Falkowski**

Arguably, the end of the Archean eon, 2,500 million years ago marks the most important evolutionary event in Earth’s history, the start of oxygen accumulation. Oxygen production is a product of the photosynthetic process involving the oxidation of water which is intimately linked to other key biogeochemical cycles, particularly that of nitrogen. It is possible to address changes in the nitrogen cycle that occur as a response to oxygen production by looking at the ratio of nitrogen’s two isotopes, $^{14}\text{N}$ and $^{15}\text{N}$, in the dominant form of nitrogen that was assimilated by organisms and ultimately incorporated into the sedimentary record.

Nitrogen is an essential macro-nutrient that, unlike P for example, exists in multiple different redox states. During the first half of Earth’s history, ammonia was the dominant stable form of nitrogen available to marine organisms and, until the evolution of nitrogen-fixing organisms, was only added to the ocean as a result of lightning and meteorite/asteroid impacts. The isotope composition of this dissolved nitrogen form was no different to the atmospheric $\text{N}_2$ from which it was derived. A key part of the nitrogen cycle, both today and in the past, is the oxidation of ammonia to nitrite and nitrate by nitrifying bacteria in the presence of oxygen, and their reduction from nitrite and nitrate to molecular $\text{N}_2$ by denitrifying bacteria as they consume organic carbon. Both oxidation and reduction processes impose a change on the isotope composition of the nitrogen involved, showing a greater preference for $^{14}\text{N}$. This useful property allows us to use nitrogen isotopes to determine changes in the redox state of the environment and hence oxygen availability. For the oxygen-starved Archean, this translates to the first appearance of the production, and then accumulation of oxygen in the surface ocean and atmosphere.

Before there is any evidence of oxygen in the atmosphere based on redbeds, characterized by red Fe(III)-bearing minerals or other geochemical and isotope markers, we have found that nitrogen isotopes in isolated organic matter (kerogen) indicate an ocean nitrogen cycle very different to today’s – indeed one operating in an almost a reversed state where ammonia was abundant at depth and nitrite and nitrate behaved as virtually transient species in the surface ocean. As time progressed and the usually tightly coupled primary production - respiration become decoupled by accelerated sequestration of organic carbon into sediments of large epeiric seas that first appeared at this time, the production of oxygen and nitrite/nitrate finally managed to outpace their consumption leading to the accumulation of nitrate and then oxygen.
NJGS-Rutgers Drilling at Medford
Contributed by Peter J. Sugarman

The Medford Township drillsite (April and May 2007) was continuously cored to a depth of 1090 feet as part of a cooperative effort between the New Jersey Geological Survey, Rutgers University, and the United States Geological Survey. Drilling targeted thick Cretaceous and limited Paleocene sediments to investigate the relationship between global sea level and sequence boundaries along the Atlantic margin, key stratigraphic intervals (e.g., Cretaceous/Tertiary and Paleocene/Eocene boundaries), and the distribution of major aquifer sands and confining beds in New Jersey. Preliminary highlights from Medford include a thick, fossiliferous Campanian to Maastrichtian section (Sr-isotope age estimates of 78-66 Ma). The majority of the core is dominated by a very thick Aptian to Santonian non-marine section, which contains numerous thick confined aquifers.

The Medford cores, along with cores from previously New Jersey Coastal Plain sites (ODP Leg 174AX), are housed at the Rutgers/New Jersey Geological Survey Rift-Drift Core Repository. These cores have provided valuable material for undergraduate and graduate scientific studies at Rutgers, and other scientific institutions throughout the world for more than a decade.

Footnote: Ken Miller grew up in old Medford.

A GSSP for the base of the Eocene at Dababiya Quarry, Egypt
Contributed by Marie-Pierre Aubry

Little known, and even less understood, Chronostratigraphy is to Geological Sciences what Grammar is to Literature. At the convergence between Stratigraphy and Geochronology, Chronostratigraphy provides the strato-temporal framework upon which Geological History relies. It ensures that stratigraphic strata are assigned the proper relative age, with the corollary that the timing of geological events is correctly determined.

The International Commission on Stratigraphy (ICS) has been involved since 1986 in a long-term effort to formalize all chronostratigraphic boundaries, not only those of the Phanerozoic, but also those of the Proterozoic and Archean eonothems. About half of these are now formally defined, each being a stratigraphic horizon selected for a remarkable ease of lateral correlation over long distances—if not globally. This horizon represents a moment in earth history at the boundary between two temporal intervals (ages, epochs, periods, eras, eons).

The formal definition of the Paleocene/Eocene boundary, accepted by the ICS in 2004 and subsequently ratified by the International Union of Geological Scientists (IUGS), is the latest to be fully documented. The boundary horizon—the base of a dark gray clay bed—is located in an artificial outcrop section in a vast quarry just east of the Village of Dababiya on the right bank of the Nile Valley, about 35 km south of Luxor. The clay bed is the lowest in a typical succession of 5 beds (Dababiya Quarry Beds) recognizable throughout Egypt, but also over large areas of the middle East. What makes this definition particularly attractive is that the boundary horizon occurs in a continuously exposed, 120 m-thick stratigraphic succession from upper Paleocene through lower Eocene. As defined, the base of the Eocene is correlatable worldwide—i.e., at all latitudes and in all environments—through the abrupt decrease in δ13C known as the CIE (Carbon Isotope excursion; documented from marine and terrestrial carbonates and organic matter). A plethora of paleontological and sedimentological events permits delineation of the boundary in the absence of geochemical data.

The selection of the boundary stratotype has involved studies conducted almost worldwide (Europe, Middle East, North Africa, North and South America, China, Ukraine, India, New Zealand, and numerous DSDP and ODP sites). When the Working Group on the Paleocene/Eocene boundary was first organized, it was thought that nothing of importance had occurred from 65.5 Ma (K/P boundary) to 33.7 Ma (Eocene/Oligocene Boundary). After >15 years of research, the Paleocene/Eocene boundary (55.8 Ma) is recognized as a critical moment in Earth history, which changed the course of evolution set forth through Paleocene recovery after the impact event at 65.5 Ma. The cause(s) and mechanism(s) that resulted in the disruption of the carbon cycle, global warming, and extinctions/accelerated turnovers in the microbenthos and oceanic plankton and terrestrial mammals remain controversial.

For further information: Aubry, M.-P., Ouda, Kh.,
Field Work in Kamchatka
Contributed by Alex Nikulin

In the summer of 2007 graduate student Alex Nikulin and a group of other U.S. scientists participated in a Partnership in Research and Education (PIRE) project. PIRE is a collaborative effort between U.S. scientific institutions and their counterparts in Russia and Japan. This project aims to promote understanding and collaboration between scientists working in the varying fields of Geological Sciences through joint field work efforts in Kamchatka, Russia. The main site of study is Bezymyannii Volcano, one of the most active volcanoes in the world and until recently off-limits to foreign scientists. An integral component of PIRE is the seismic investigation of Bezymyannii undertaken by U.S. and Russian participants in the summer of 2007.

Previously, the closest operational seismic station to Bezymyannii was approximately 11 km away, which greatly limited resolution of volcanic seismic signals. U.S.-based seismic investigation group, working in close contact with Russian counterparts from the Seismic Hazard Service (OMSP), installed the first stations of a new Bezymyannii seismic network. Our team successfully installed two temporary stations and three year-long deployments, within 2 km of the crater. Deployment of permanent stations was carried out by members of OMSP in coordination with the U.S.-based group. Today, the seismic network surrounding the summit of Bezymyannii consists of 3 temporary and over a dozen permanent stations, with more installations scheduled for 2008. Results based on data acquired by the new network will emerge following the 2008 field season.

New Initiative: Freshly Brewed Continental Crust
Contributed by Esteban Gazel, Michael J. Carr, Vadim Levin and Claude Herzberg

One of the most fascinating questions in the evolution of the Earth is how its continents formed. One model suggests that continental crust forms by a magmatic “brewing” process along the edges of thicker, and therefore buoyant, regions in the oceanic plates, known as oceanic plateaus.

Following J. Hutton’s “The present is the key to the past,” we decided to find a place in the world where this intriguing process is occurring at present. Only a few places in the world can be used as today’s natural laboratories because they require the following ingredients for the brewing process: No previous cratonic-continental-basement, location at the edge of an oceanic plateau (filter) and at subduction zone (brewing agent).

Following the steps of the Spanish conquistadors, albeit seeking knowledge rather than gold or silver, we selected the Talamanca Cordillera in southern Costa Rica. The “Talamancas” are still one of the least studied parts of the world, surrounded by virgin jungles, isolated from civilization. With heights of almost 4000m, this is the only area of Central America where in winter one may see sunset glitter on the ice. But this is also the only area where rocks formerly deep in the crust are uplifted and therefore the best place to address the puzzle of the evolution of continental crust.

The Transformations of Oceanic Plateaus into Continents (TROPICS) initiative started in January 2007 with a planning meeting in Costa Rica funded by the NSF International Division. The meeting was attended by a
multidisciplinary group from University of Costa Rica (UCR); Rutgers University, NJ; Columbia University, NY; University of Alaska, Fairbanks; Michigan State University; CalPoly Pomona, CA and California State University, Stanislaus. The first day started with an introduction of the participants and an informal discussion that evolved into a short presentation session in the auditorium of the Central American School of Geology (UCR). This section was followed by a field trip around the Talamanca. The field trip initially followed the Interamerican highway on the Pacific side of the cordillera. On the first day, we studied granitic outcrops with a couple of stops for coffee and sightseeing. On the second day, we focused on geomorphology, tectonics and more granites with stops for serious discussion and “refreshments”. The Pacific side “camp” was a beautiful family-owned mountain lodge. The food was superb and the fireplace was surrounded by geologists (and a stray Peace Core volunteer) discussing matters of crustal evolution until late into the night. From here we moved to the Caribbean side of the cordillera, stopping at key geomorphologic and tectonic sites. Lunch that day was improvised in a typical Costa Rican restaurant. The meeting concluded with an important discussion session at Hotel Suerre’s convention room, with incessant rain providing a hint of practical challenges we will encounter in the field.

**Sea-level Workshop**

**Contributed by Andrew Kulpecz**

Holding a conference on global sea-level change over 600 miles from the nearest ocean may raise a few eyebrows, yet that’s exactly what happened in October when dozens of geoscientists convened in Salt Lake City, Utah for the JOI/ICDP/DOSECC/IODP/Chevron workshop on Sea-Level Change. Rutgers was particularly well represented, as Ken Miller, Peter Sugarman, and Greg Mountain joined five doctoral graduate students (Andrew Kulpecz-ABD, Don Monteverde-ABD, Jane Uptegrove-ABD, Ashley Harris-2nd year, and Svetlana Mizintseva-1st year) presenting research and participating in the workshop. The strong Rutgers representation was more than double that of any other university.

The conference was convened to not only review advances in sea-level reconstruction over the last 15 years (e.g., New Jersey and Australian margins, the Bahamas, Ocean Drilling, etc.), but also develop a framework for future scientific efforts. These issues were addressed in smaller breakdown sessions that evaluated future principles and strategies, the appropriateness of the drilling transect strategy, the need for two and three-dimensional backstripping, the identification of the mechanisms behind short and long-term sea level variability, and the generation of an important short-list of potential geographic sites for future drilling.

A highlight of the conference was a short mini-field trip to the “birthplace of sequence stratigraphy”, the world-class outcrops of the Book Cliffs in eastern Utah. Led by Bryan Bracken, Sunday Shepherd, and Peter Sixsmith of Chevron’s Shallow Marine Clastics Group, the trip not only provided an excellent crash course on the fundamentals of the discipline, but also fostered many well-natured (and sometimes heated) exchanges and discussions by the participants. The trip culminated with a trip to Ray’s Tavern in Green River, Utah: the “Tavern On The Green” of the American west for visiting geologists.

**Department News**

**Contributed by Kenneth G. Miler**

What’s in a name: our future as Earth and Planetary Sciences (EPS). Our department envisions a future that will not only be in integrated Earth Systems Science, incorporating Earth, Ocean, and Atmospheric Sciences, but also in planetary sciences as NASA and other funding agencies continue to ramp up Mars exploration and astrobiology. Scientists in other Earth and Planetary Sciences departments in the country (e.g., Harvard and Cal Tech) are amongst the leaders in helping understand astrobiology, and we have nascent components already present here at Rutgers. The name change clearly distinguish us from Geography (the other G department) and Geology/Geological Sciences programs at other schools, and serves to redefine our mission into a broader, Earth Systems approach.

The faculty in our department continue to excel. As noted above, we are the only department in the University with 3 NAS members. But every bit as important, is that every one of our 21 tenure/tenure track faculty and 31 Ph.D. scientists (including 5 research associates, 3 emeriti, and 2 adjuncts in resident) are scientifically very active. We are currently recruiting in the field of global biogeochemistry and anticipate a hire for September 2008. I am very proud of the breath and energy of this fabulous faculty.
Our graduate program has grown in numbers and strength. Thanks to the efforts of Graduate Program Director Carl Swisher, support from ExxonMobil and the university, we jumped from 18 full-time supported students to 24. ExxonMobil sponsored a third year of a Micropaleontology Fellowship and support for two very talented young Indonesian masters students. The university provided support for a K-12 fellowship and a diversity fellowship, 3 university fellowships, and 9 Teaching Assistants. Chevron and ExxonMobil both recruited on campus (the former for the fourth year, the latter for the second) and extended numerous internship and job offers. I am proud of our students for their outstanding contributions at GSA and AGU and how they impressed Chevron and ExxonMobil. Chevron and ExxonMobil both made gifts to the department to help us with our efforts to support graduate students. The quality of our graduate students continues to improve and we regularly compete with the top programs in the country for the best students. Your contributions greatly helped us as we were able to send many students to GSA and AGU to present papers (see various reports below). This not only helps us develop stronger, more experienced students, it also helps us with visibility amongst our colleagues. Our graduate students help put us on the map.

The number of majors varies. The current class has 12 students, which is above average, but it appears that the next class will be only a handful. Our minors are steady with about 50 students. We are working to improve our connection to undergraduates. We continue to teach over 3000 students per year at the introductory level with exemplary teaching rankings (>4.0/5.0). This “bread and butter” for the university has not yielded an increase in the number of majors, which is understandable because >95% of the students in our 100- and 200-level classes are non-scientists fulfilling a science requirement.

We are trying innovative techniques to improve teaching the large non-science classes and to bring a personalized undergraduate experience to others. The 100 level intro class is now comprised of 14 sections of 100-250 students in the academic year (including a Saturday class), plus 4 in the summer and one in the winter session. Carl Swisher has broken off 101 into a science-oriented class that requires a lab (back to the future for those of us who went undergrad to the banks). Gail Ashley, our undergraduate program director, is working on a personalized laboratory class for the SAS Honors Program. We tried this twice in the late 1990’s with success in attracting very talented majors. Finally, we are moving forward with implementing one of President Dick McCormick’s visions: teaching first-year seminar classes to a dozen students per class.

Dick McCormick patterned the First-year seminar series after those at Princeton and Harvard. Ten to fifteen first year students enroll in one of 65 sections offered each semester by the top researchers at Rutgers. Dick himself teaches a section that meets for one hour per week for 10 weeks (pass/fail). This year, Peter Rona and I each offered first-year seminars. I had 11 very bright and eager undergraduates in mine: Global Climate and Sea-Level Change in New Jersey: Should I Sell My Shore House? We journeyed to Ocean Beach to see how not to develop the shore, then down to Island Beach to see a very special pristine shore environment. We took an overflight of the Jersey shore from Lakehurst Airport to Sandy Hook, turning around over the point, and heading south to Brigantine. I tried to instill scientific skepticism in my students: don’t simply accept what you read. At least one student converted to Geological Sciences and declared a major (one of the brightest young women I have had in my 20 years of teaching), with two others considering it. Next year, Peter will run his oceanography seminar and I will reprise mine. Other faculty members have applied to offer first-year seminars.

We extended our critical thought approach to our graduate seminar series. In the Spring 07, Greg Mountain and others taught Peak Oil, a critical assessment of energy. We did not simply accept Hubbert and Deffeyes, but had a serious look at the data. In the Fall 07, I led a Geological Record of Climate Change graduate seminar. We took an open look at the problem of climate change by inviting climate skeptic Dick Lindzen from MIT and Rutgers own Tony Broccoli (head of our climate initiative) and Alan Robock to give departmental colloquia. Our goal was to provide thoughtful balance on the issue of global climate change. It is interesting to compare and contrast earth sciences with our colleagues in ocean and atmospheric sciences. We are a skeptical bunch, though the graduate seminar and our colloquium series provided much useful data and extensive discussions. I have been on the road presenting “Should I Sell My Shore House? to over 20 universities and many citizen groups. The take home message is that we almost certainly see >80 cm of rise by 2100 (see article above by Kennish and Miller).

Last year I discussed two major happenings at Rutgers: the budget crisis and the first major reorganization at Rutgers in 25 years. We weathered the budget crisis, with no major cuts this year. Our fingers are crossed with the happenings in Trenton for next year. It is not clear if the state of New Jersey will continue to support higher education. Stay tuned.

The initiation of the School of Arts and Sciences occurred this year with the admission of the class of 2011. Every indication is that consolidation of Rutgers College, Douglass College, Livingston College, and University College into the SAS has been a great success, though the academic improvements and enhancements do take time. As I noted last year, I am a RC alumni, married to a DC alumna; my son Ken was graduated from RC and the School of Business this year (I got to sit behind James Gandolfini on the graduation podium). My son Bobby is applying to SAS this year. I can truly report to you that in reality, this is not a major change. RC, LC, DC, and UC
have shared the exact same faculty, majors, and 95% of the same graduation requirements since 1980. The only major difference among the colleges was where students lived, and even there, there were many mixes (e.g., UC students in CAC dorms). Yet, minor differences in graduation requirements and the admissions procedures that were in place confused students and faculty and served us poorly. Despite rumors of its death, DC, a gem in the education of women, is not dead. Dorms will still be assigned to women only on the Douglass campus, and additional resources on women’s issues will be directed to these living units. Cook College has morphed into the School of Environmental and Biological Sciences (SEBS) and will maintain a very similar persona to the Cook College you all know and love. Bob Goodman is the talented new dean of SEBS, with whom we have excellent relations. To repeat the bottom line stated last year: application procedures will be clearer, students’ course requirements will be much more uniform, the individual campuses will continue to offer lifestyle differences, and overall the quality of student life will be improved.

Our future lies in the EOPS building (see front page). Rutgers will supply 55 m$ of the 65 m$ for the Earth, Oceans, and Planetary Sciences building (EOPS) to be built on the Cook Campus. This building will be a ~110,000 sq ft (gross)/60,000 sq ft net “green” building that will house EPS and provide expansion space for the IMCS. We will occupy about 45% of the space. The EOPS building will be a keynote in the expansion of the Cook Campus. The co-location of EPS with IMCS in close proximity to Environmental Sciences, Atmospheric Sciences, Ecology and Evolution, and Anthropology signals not only an opportunity for all of Rutgers, but a breakdown in barriers between different schools. We see ourselves as a critical bridge between SEBS (Cook) and SAS (our home school of arts and sciences), especially in the sciences of the environment. We will continue to grow with the IMCS (the hire we are pursuing will be our 5th joint faculty member) and the Department of Environmental Sciences (with whom we share Ying Fan Reinfelder and Nathan Yee). Our founding IMCS director, Fred Grassle, is stepping down as director after 17 very successful years. Dennis Kent and I are on the selection committee; we anticipate appointment of a new director in the spring.

I hope that this issue of the Redbeds has painted a picture of a vital, active, and growing Department of Earth and Planetary Sciences, with research strengths in global biogeochemistry, volcanology, paleoceanography, paleomagnetism, radiometric dating and time scales, Quaternary Studies, meteoritics, and structure. Our reputation continues to grow, both in academia and in industry, and we hope to achieve our goal of being one of the top 10 Earth Science Departments in the country.

Kent Appointed Board of Governors Professor
Contributed by Kenneth G. Miller

On June 13, 2007, The Rutgers Board of Governors (BoG) elected Dennis V. Kent Board of Governors Professor of Geological Sciences. The BoG invited Dennis, Executive Dean Ziva Galili, and me to the meeting, but instructed us NOT to announce until the BoG voted. The board read the following resolution:

**BoG Resolution:** Whereas, Dennis V. Kent has been named a Board of Governors Professor of Geological Sciences, acknowledging his intellectual leadership and the scholarly impact of his work internationally. He joined Rutgers in 1998 after serving as a senior research scientist and director of research at Lamont-Doherty Earth Observatory of Columbia University, where he earned a doctorate in marine geology and geophysics. He remains an adjunct research scientist at Lamont-Doherty. Kent has made fundamental contributions in the areas of global tectonics, stratigraphy, paleoclimate studies and geophysics. He is the author of more than 230 journal and book articles dealing with various aspects of Earth magnetism, and is one of the most highly cited earth scientists in the world. Recently elected to the prestigious National Academy of Sciences, Kent also is a fellow of the Geological Society of America, the American Geophysical Union and the American Association for the Advancement of Science. Kent also has been recognized with many honorary degrees and awards such as the Arthur L. Day Medal from the Geological Society of America and the Petrus Peregrinus Medal from the European Geophysical Union. He has held offices with the American Geophysical Union and served on professional and government panels and commission.

**Citation from the Dean of SAS:** Dennis Kent’s scientific accomplishments are outstanding, for he is a leader in the field of paleomagnetism and has played a key role in understanding geologic time. But it is not only his science, but also his service that has helped to elevate Rutgers amongst institutions in both Geological and Ocean Sciences. He was instrumental in Rutgers breaking into the Joint Oceanographic Institutions (JOI). Rutgers was the first institution admitted in 17 years to what had become a fraternity of oceanographic institution. Dennis has served as chair of the JOI Board of Governors, culminating in the merger of JOI with Consortium on Ocean Research last week to form the largest organization representing ocean research in Washington. Dennis was responsible for luring his co-authors on the seminal time scale to Rutgers: Bill Berggren, Marie-Pierre Aubry, and Carl Swisher. In his spare time, he can be found sailing down the Hudson from his home in Piermont onto Block Island and points beyond.
Rutgers Represented at AAPG/SEG Student Expo and AGU
Contributed by Alisha Henza and Andrew Kulpecz

This year Rutgers graduate students Mike Durcanin, Samuel Henderson, and Alisha Henza attended the 10th annual AAPG/SEG Student Expo in Houston. The Expo is designed to link geoscience students with industry recruiters by providing an environment in which students can network and interview with multiple employers. This year’s Expo had a record 230+ attendees and representatives from 34 companies on site. Day one of the expo included field trips, an open poster session, and an icebreaker. The following day was filled with interviews and poster presentations, with poster awards presented during an informal lunchtime session. Rutgers students almost swept the poster awards, with Alisha Henza winning first and Sam Henderson winning third.

Rutgers graduate students joined faculty members on the Newark-San Francisco long haul flight to attend the 2007 annual meeting of the American Geophysical Union in mid-December. Six doctoral students presented their research at the event, and spent time networking with colleagues from across the globe. At AGU, Aurora Elmore presented a poster entitled Northern Component Water Variability Over the Past 21 kyr: High-resolution Records From Eirik and Gardar Drifts. Sam Henderson presented a poster on Increased Sensitivity of Northern Component Water on Millennial Scales During Glacial Intervals. Andrew Kulpecz presented his research on the Post-Impact evolution of the Chesapeake Bay Impact Structure: Local and Regional Effects. Alex Nikulin presented Widespread presence of serpentinite within the Cascadia megathrust suggested by teleseismic receiver function analysis. Ian Saginor presented a poster on Episodic Volcanism and Geochemistry in Western Nicaragua on the evolution of the Central American Volcanic Front through time. Morgan Schaller presented Is Regional Groundwater Flow a Significant Component of the Water Budget in a River Basin?

Rutgers Students at GSA
Contributed by Svetlana Misintseva

Among the spectacular Rocky Mountains in Denver, Colorado (the Napa Valley of beer), the GSA held its 2007 annual meeting. The hottest topics at GSA were sessions on the Chesapeake Bay Impact (co-chaired by Ken Miller); ongoing K/T boundary controversies; and a Pardee Symposium on the Cause of Global Warming. The Pardee session opened with Ken Miller’s talk Sea-Level Rise: Should I Sell my Shore House? The session triggered a huge discussion amongst the 500 people in the GSA auditorium. I presented a paper on Late Cretaceous sea-level studies that stimulated discussion during the Stratigraphy poster session. Lauren Neitzke presented a poster on her research on deep-Atlantic circulation. Alisha Henza presented a paper on deformation during multiple phases of extension in experimental model.

Lauren, Alisha and I staffed the Rutgers booth this year at GSA. The Rutgers booth demonstrated the high educational and professional level of our graduate program. The general feedback from the people who stopped by to talk was overwhelmingly positive. This attitude might be one of the reasons that on alumni night, the Rutgers spot was attended not only by our students, faculty, and alumni, but students and faculty from Michigan, Australia, and other universities. I was proud to participate in GSA as a member of the Rutgers Earth and Planetary Sciences team. It contributed a great deal to my professional development, and increased the momentum of my research. I want to express my thanks to the Steven J. Fox fund for financial support. I strongly encourage our all students to attend national geological meetings. It is a great experience.

Kudos, External Funding, and Comings/Goings

Kudos to all for a once-again exemplary teaching record for the Fall 06. In the 100- and 200-level courses, we averaged 4.3 on teaching effectiveness and 4.2 on course quality. In the 300- and 400-level courses, we averaged 4.6 on both. Overall we averaged 4.4 on teaching effectiveness and 4.3 on course quality (out of 5 possible). Top rankings were earned by graduate student Andrew Kulpecz (5.0/4.92) in Stratigraphy lab, part-time lecturer Don Monteverde (4.73/4.62) in Planet Earth, Carl Swisher (4.71/4.52) in Physical Geology, and Ying Fan Reinfelder (4.83/5.0) in Hydrogeology. Bill Gallagher won the field with a 4.93/5.0 for Paleontology. Great job to all!

Graduate student Lauren Neitzke was awarded a K-12 Fellowship for 07-08, the Gretchen L. Blechschmidt Award for 2007 for $1500, a GSNB award for special study of $1200, and a Northeast Section of the Geological Society of America travel grant to present research titled Variations in Deep-Water Circulation on Eirik Drift from the Last Glacial Maximum to early Holocene. The Gretchen L. Blechschmidt Award is given to women in Geological Sciences who are interested in achieving a Ph.D. in the fields of Biostratigraphy and Paleoceanography.

Undergraduate student Naya Sou was the winner of the undergraduate research symposium. She was supervised in this effort by Post-doc Bridget Wade.
Alissa Henza, Ian Saginor and Aurora Elmore were awarded GSNB Conference Travel Awards.

Ph.D. Candidate Aurora Elmore was awarded a GSNB special study award to conduct research at Cambridge University in England.

Five members of EPS participated in the Big Chill, a 5 km run/walk to raise toys for underprivileged children on Sat. Dec. 8, 2007. The number of toys raised by RU for the kids was staggering. Dean Michael Carr (second from right below) had the best time on our team. Graduate students Pablo Ruiz (on left below), Svetlana Misintseva, and Chair Ken Miller (second from left) also ran. A great time was had by all.

Graduate student Alissa Henza was invited to participate in an ExxonMobil short course and field trip in the La Popa Basin, Monterey, Mexico, March 4-8 and has accepted an internship with BHP Billiton next summer.

Graduate student Esteban Gazel Dondi was awarded a Graduate School Excellence in Research Award, an Excellence Fellowship, and $1500 from the Geological Society of America for his research on Mantle sources of the Central American Volcanic Arc: The Influence of the Galapagos Plume and the Relation to the Caribbean Large Igneous Province.

Graduate student Joe Boesenberg, along with our ex-student Harold Connolly chaired a session on Chondrules and their Formation at the 38th Lunar and Planetary Science Convention in Houston. They both gave talks, along with our post-doc Scott Whattam.

Post-doc Bridget Wade accepted a position as an Assistant Research Professor in the Department of Geology and Geophysics of Texas A&M University in College Station, TX.

The Board of Governors announced the promotion of Roy Schlische to Professor I.

Ken Able and Peter Rona, Co-PIs, received a $150,000 grant to study Essential Fish Habitat in Hudson Submarine Canyon Head, from the NOAA Undersea Research Program, plus 16 days on NOAA Ship Ronald H. Brown and Autonomous Underwater Vehicle (AUV) Eagle Ray, March 2007 with a cruise in August 2007 (Rona 90%). Peter served as chief scientist on the cruise and lead author on a paper reporting the cruise results at the AGU Fall Meeting. The results reveal a dynamic interface between continental shelf and slope water masses in the water column and apparent gas hydrate structures and methane venting on the seafloor.

Research Professor Miriam E. Katz accepted a position in the Department of Earth & Environmental Sciences, Rensselaer Polytechnic Institute, Troy, NY.

President McCormick awarded Peter Sugarman a Part-Time Lecturer Activities Fund award for $250 for his presentation: Hydrostratigraphy of the NJ Coastal Plain; Sequence and Facies predict continuity of aquifers at the 2006 GSA annual meeting.

The U.S. Advisory Committee (USAC) for scientific ocean drilling has officially approved the appointment of Professor Yair Rosenthal to the IODP Science Steering and Evaluation Panel (SSEP), effective 1 October 2007 through 30 September 2010. This is the lead evaluation panel for the Integrated Ocean Drilling Program.

Distinguished Visiting Professor William A. Berggren was elected one of the 25 most influential Dickinsonians (i.e., graduates of Dickinson College) in America, along with Judge John Jones who wrote the decision a few years ago keeping intelligent design out of the classroom.


Professor Gail M. Ashley was named co-chair of the NSF GeoVision Working Group. This is a committee comprised of representatives from the three Divisions of the Geosciences Directorate and charged with writing a plan that will provide a comprehensive view of the geosciences and vision for the future. The plan is expected to serve the Directorate for the next 5-10 years as it interacts with NSF management, other government agencies, and the research and education communities.
The Exobiology program NASA awarded Paul Falkowski $450,000 for his three-year proposal on Biosignatures in evolving planetary atmospheres.

Professor Ying Fan Reinfelder and Paul Falkowski, who each received Academic Excellence Grants from Rutgers. Ying’s project, Global Wetland Distribution and Climate Change: A Seed Project, has been selected to receive an award of $51,000 from the 2006-07 Academic Excellence Fund (AEF). Paul received funding toward the Rutgers University Energy Institute.

Professors Ken Miller and Dennis Kent were awarded a three-year grant from NSF/OCE for $150,000 for Archiving and Advancing Core Curation and Database Management of ODP Legs 150X and 174AX cores: The Rutgers U.S. Atlantic Margin Core Repository.

NASA awarded Professor Roger Hewins and Research Associate Jerry Delaney $550,000 toward the cost of a new microprobe analytical facility. Roger and Jerry were PI’s (along with co-PI’s Harold Connolly and Michael Weisberg of Kingsborough) on the NASA effort.

Alumnus profile: Alex Kulpecz
Contributed by Andrew Kulpecz

Alex Kulpecz is Managing Partner of Pulsar Energy LLP, a private equity investment group located in London, New York and Houston. He is one of the founders of Candax Energy Inc. producing oil and gas in Tunisia with business development throughout the Middle East and Africa. He has extensive technical, operational and management experience in the upstream/midstream oil and gas and power sectors. Over a 21 year period, he held a succession of senior executive positions at the Royal Dutch Shell group as an Executive Committee member, primarily in the exploration and production area and latterly as Executive VP of Shell International Gas and Power for Eastern/Central Europe, Russia, Africa and Latin America. During this time, he was responsible for numerous major capital projects, strategic initiatives, reorganization of the company and acquisitions. He resided in Damascus and led Shell’s development of Oil & Gas assets there from 1990-1993 bringing production to 400K BOPD. More recently he was President of Azurix International (water business) and has acted as a senior energy advisor to private equity and investment funds (Candover, Carlyle/Riverstone, ITI Energy, Silver Point Capital, Boston Consulting Group). He has been involved in several highly successful financial transactions and serves on the Board of some of the companies involved (ITI Energy, Chairman of 4Gas – an LNG terminal company, Kerogen Resources). Mr. Kulpecz, who is based in London and New York, has a B.A. and M.Sc. from Rutgers University, an M.B.A. from Brunel/Henley Management College and is completing a Ph.D. at Imperial College, London.

Alumna profile: Brenda Ekwurzel, Climate Scientist (UCS) Washington, DC
Contributed by Gail M. Ashley

Brenda graduated cum laude from Smith College (1985) and came to Rutgers for her Masters in coastal processes research (gravel beach dynamics) at Cape Cod National Seashore completed in 1988. She worked as a hydrologist for Connecticut DEP and finished a Ph.D. (1998) at Lamont-Doherty, Columbia University in Geochemistry. Her dissertation used tritium, helium, and $^{18}O$ to trace circulation in the Arctic Ocean. After a post-doc at Lawrence Livermore, Brenda joined the faculty at University of Arizona. In 2004, she moved to Washington, DC to take a position as Climate Scientist at the Union of Concerned Scientists (UCS) and has been in the center of the whirlwind of climate change issues since. The UCS combines independent scientific research and citizen action to develop innovative, practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices on a range of issues, from global warming and the dangers of nuclear weapons to vehicle pollution and the risks of genetically engineered food crops.

Brenda leads UCS’s climate science education work. She recently drafted cogent, readable summaries of the IPCC reports on Climate Change Science, Impacts and Mitigation. She is involved in public outreach giving presentations on the latest scientific developments to K-12 students, University, business leaders, and local organizations. Her job involves communicating science to the media with over 60 spots including: USA Today, Washington Post, NPR “Intelligence Squared US”, BBC (Radio, TV), CNN (Lou Dobbs Tonight, The Situation Room), Fox (The O’Reilly Factor, Your World with Neil Cavuto, Geraldo Rivera), ABC (Good Morning America, World News), WBAI (Democracy Now).
Brenda reflected on her time at Rutgers saying “…“When an audience member, a reporter, or congressional staff person raises questions, I am often astounded by how many times I draw upon my experiences over 20 years ago in coastal processes gained during my Rutgers research. Since climate change touches upon so many aspects of Earth Science, I also plumb the experiences from my Arctic Ocean and sea ice research, hydrology studies in California, and working with students on wildfire impacts, drought, and water resources in the U.S. Southwest. A lesson I learned from Gail Ashley was since my modern process field study only covered a two year period we must compare these results with studies of rocks that hold the history of episodic, but powerful events that moved large volumes of sediment and the day to day average events accumulated over time for us to read like a book. When a reporter asks about a new study with data that may be too brief to draw climate trends from, I often alert the journalist to other studies with longer paleoclimate records to put the results into perspective.” It is great to see Brenda applying her geology background to the myriad of issues facing the US and the world…she is in a position to make a difference. See www.ucsusa.org.

Alumni News

Please send alumni news to Ken Miller kgm@rci.rutgers.edu and list “alumni” in message heading

We had a Rutgers sign at the GSA Alumni gathering in Denver and the usual suspects showed up. It is always great to see Dick Enright, Roy van Arsdale, Beth Christensen, and Alicia Kahn at these gatherings. But the next annual meeting should be different: GSA pulls into oil-town (Houston) 5-9 Oct. 2008 and we will try to arrange a dinner for our alumni.

We regret to announce the passing of George O. Scott (RC ’52), founder of DORSO LP in Pittsburg. A native of Newark, N.J., Mr. Scott volunteered to serve in the Army during World War II, enlisting in 1942 and serving in northern Africa and Italy. His partner and son-in-law Wally Phillips said “He had a passion for the oil and gas business and for people. I don’t know that he knew a different way of doing it. He was very close with his family and very close to his business.” George was a strong supporter and friend of the department and we will miss him.

Bob Marvinney (RC ’78) has been Maine State Geologist since 1995, the experience broadening his capabilities beyond bedrock geology to include surficial geology, groundwater, marine geology, and geologic hazards. Fortunately, he can rely on his staff who are the true experts in these areas! Since taking the position of Director, he has overseen a complete revamping of the map production and distribution system at the Maine Geological Survey, with all geologic maps now available for free on his website. Bob is a past president of the Association of American State Geologists. His son, Kyle, just began studying geology (!) at St. Lawrence University.

Jim Heller sent a quick note to say thank you for the Alumni Newsletter. He enjoys reading about the Department's accomplishments and the amazing work that the faculty, staff and students have undertaken during the past year.

Tom Zondlo reports “Since graduating with a BS in geology in 1978 (Cook), I briefly tried to find gainful employment as a geologist, but learned that's a pretty tough thing to do from NJ with an undergraduate degree and at that time. Worked for a brief while with Western Geophysical in Houston - actually OUT of Houston, working as a surveyor laying out seismic lines throughout Texas and L.A. Returned home and got married (Kathy) in 1979 and promptly moved us to Knoxville where I initiated pursuit of an MS degree in geology at the University of Tennessee while concurrently working for a local firm doing mineral, coal and petroleum exploration in TN and surrounding states. The pay was not special (one has to eat however), but the experience was sufficient to land me a real exploration position with an oil company in Denver. So I put the MS on hold and we moved out west, where I worked for the next 7 years for Husky Oil (later acquired by Marathon) and then Mesa Petroleum (yes, I DO know T. Boone Pickens!) as an exploration geologist working the northern Rockies plays in the Williston, Powder River, Wind River Basins and throughout other areas of Central and western Montana. It was great and I enjoyed a number of successes (one of the beauties of smaller companies is that they really act quickly). And then the downturn came. Kathy and I turned down a transfer to Amarillo, the corporate headquarters and decided to move back east, closer to family. So we moved back to NJ and I entered the environmental field with Dames & Moore. What a mistake (moving back to NJ, not D&M) - it had become unaffordable and too congested and within a year we moved again. Back to Knoxville where I worked for CH2M Hill on environmental problems at the DOE Oak Ridge Reservation. I then worked for Oak Ridge National Laboratory for seven years as a research member in the Environmental Sciences Division. What a great experience and one I will always cherish. It also provided me the opportunity to finally finish (in 1997) the MS degree at UT. But all good things come to an end, and when Lockheed Martin, who ran the lab, lost the DOE contract in 1998, so did my job along with about 3,000 other folks. I was fortunate to transition right over to Shaw Environmental (then IT Corp), where I have been a Consultant/Sr. Hydrogeologist since. I've developed expertise in karst hydrogeology and apply this to environmental problems at DoD facilities in AL and TX. Still married to Kathy (28 years), have one child (son Zach, a HS junior) and loyal dog. We both have surviving parents in NJ as well as other family and so return periodically to visit. Unfortunately, we are so busy running around that I've never had an opportunity to visit the department. From the Redbeds it's clear that the department is thriving and growing. Well, that's my story and (I'm sticking to it). Best of luck… If in Knoxville…”

Kathryn G. Takacs reports “I just saw the 2007 Redbeds…one of my colleagues was asking me about the Freehold Township meteorite (they all know I'm an Alum, especially with the football team doing so well). A lot has happened since my 2005 message, I finished my MS in July 2005 in Geochemistry. I am still working at the Kentucky Geological Survey, and I have been accepted into the Ph.D. program here at the University of Kentucky. It is a big challenge, but I believe I can do it. My husband Scott is very supportive, which helps a lot. I wanted to come to GSA in Philly, but my class schedule didn't allow it. Steve Cordiviola mentioned that he spoke to you there. I hope all is well with everyone there.
How to help us

The Geology Development Fund is the mechanism for directing alumni contributions to the department. To help the Department, please specify the Geology Development Fund on your contribution. Your gifts allow us to leverage University funds to purchase field vehicles and equipment for the department. We are particularly grateful for contributions in memory of George O. Scott from Dorso LP and his friends.

If your primary interest is supporting student research, and scholarship, please consider contributing to the Steven K. Fox Student Fund. This fund was created in Steve’s memory specifically to support undergraduate and graduate student research, field work/camps, etc. To direct contributions to this fund, specify Geology Department Steven K. Fox Student Fund on your contribution. These monies will be used as an unrestricted fund to support students, including awards for summer field camp, partial subsidies for Rutgers field camp, and graduate student field and meeting support. We are delighted to have had numerous donations this year that allowed us to support over a dozen graduate and undergraduate students (at $500 each) so they could present papers at both national and international meetings. We are particularly grateful to the strong support of Bill and Grace Sparks to the Fox fund. This support has increased student participation at meetings and is greatly appreciated. We plan to award one or more undergraduate field scholarships of $1000 for the 2008 field season. Steve would be proud of your support for these activities.

GEOLOGY MUSEUM
Rutgers, The State University of New Jersey
presents the fortieth annual
OPEN HOUSE
Saturday, January 26, 2008
9:00 a.m. to 4:00 p.m.

PRESENTATIONS 123 Scott Hall

10:00 a.m.
SAMPLING THE SEA FLOOR:
What we know and how we know it
Dr. Gregory Mountain
Rutgers University, New Brunswick
Department of Earth and Planetary Sciences

2:00 p.m.
CLIMATE, ENERGY, AND OUR FUTURE
Dr. Paul Falkowski
Rutgers University, New Brunswick
Board of Governors’ Professor of Marine and Geological Sciences
Institute of Marine and Coastal Studies and Department of Earth and Planetary Sciences

11:00 a.m.
THE DAWN MISSION:
Exploring the Asteroids Ceres and Vesta
Dr. Harry McSween
University of Tennessee
Department of Earth and Planetary Sciences

3:00 p.m.
THE FIRST THREE BILLION YEARS OF EVOLUTION ON THE EARTH
Dr. Andrew Knoll
Harvard University
Department of Earth and Planetary Sciences

ROCK AND MINERAL IDENTIFICATION 202 Geological Hall
MINERAL SALE 135 Scott Hall

Information:
William Selden, Collections Manager at (732) 932-7243 ewsselden@oci.rutgers.edu
The Museum entrance is the iron gate on the corner of George and Somerset Streets in New Brunswick, NJ.

ALL EVENTS FREE NO REGISTRATION PLEASE POST

Educators who attend Museum presentations can receive credit toward their professional development requirements. The Geology Museum is registered as a Provider with the NJ Department of Education.