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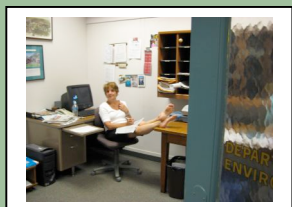
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L.Cambiotti, Editor

## LEHIGH UNIVERSITY

### Thoughts from our chair, Frank Pazzaglia...

It is really a pleasure to again have the opportunity to reconnect with all EES alumni through our annual newsletter. Faculty and student research, a new faculty hire, a growing graduate program, a ground breaking for the STEPS building that will house EES, globalizing Lehigh, and getting reacquainted with alumni are some of the highlights of a very busy and productive 2008. The importance and relevance of what we do here in EES has never been made more clear in a time when energy resources have finally emerged as a political, social, and economic national priority. The great challenge before us is to secure for this generation and the next, the energy resources we need to not only maintain our quality of life, but to improve it. In doing so, we are also challenged to be mindful of how securing and using energy can negatively impact our environment and quality of life. Through the Environmental Initiative, the new STEPS building, strategic hiring, and curricular focus EES is meeting these challenges. Many of you work directly or indirectly in the energy sector of the economy and we look to you for feedback and suggestions as to how to best prepare our students for the challenges that lie ahead. No matter what strategies we adopt, we will not be going it alone as travel and communication continues to make the world a smaller place. EES has been taking a leadership role in helping define how Lehigh transforms itself into a truly global university. Through our numerous friends and colleagues throughout the globe, in both academic and private institutions, we are poised to develop study abroad, internships, and research opportunities for EES undergraduates. We are excited by our annual Department trip and the possibilities of EES faculty-led semesters abroad and how a



broader view of Earth and Environmental realities overseas will help make our graduates more competitive. These topics and more are described in detail in the following pages, but before you turn to the next page, I want to take this opportunity to thank those that came out to meet EES students and faculty face-to-face at the GSA gathering in Houston in October. I was so pleased to have met many of you for the first time and we hope that this Lehigh alumni gathering will continue for many years to come at the annual GSA meeting. Throughout this newsletter we identify ways that you can become involved with the EES mission. As part of the extended EES family, we welcome comments, feedback, and engagement from all alumni.

With best wishes for a peaceful Holiday Season and a happy and prosperous New Year.

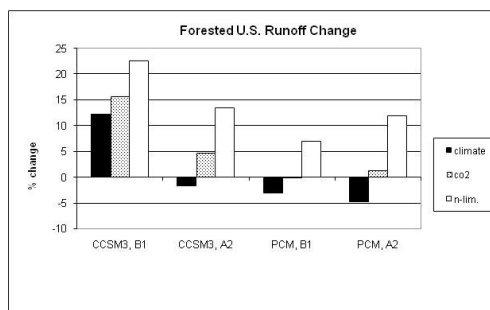
Frank Pazzaglia  
Professor and Chair

## INTRODUCING OUR NEW FACULTY MEMBER!

### Benjamin Felzer.....



My research focuses on issues related to global change and how multiple stresses affect the Earth's climate, hydrological, and biogeochemical cycles. I have a doctoral and postdoctoral background in using general circulation models and regional climate models of the Earth's atmosphere and oceans to explore Quaternary glacial and interglacial paleoclimates. For the past several years I have used these models to simulate historical and future climates, as well as biogeochemical models to help better understand the nature of the terrestrial carbon sink. I also have a background in geological remote sensing from my Master's research. The highly interdisciplinary nature of the earth system requires collaboration among many modeling groups. I am currently using the Terrestrial Ecosystem Model (TEM), originally developed at the Ecosystems Center of the Marine Biological Laboratory in Woods Hole, MA, and am developing the capability to use the National Center for Atmospheric Research Community Climate System Model (CCSM3). We have purchased a new 72 core Beowulf cluster, which is now part of Lehigh's high performance computing cluster, to run these models. Future scenarios are coupled directly to an economics model as part of MIT's Integrated Global System Model (IGSM). In particular I am studying how pollutants like ozone, greenhouse gases like carbon dioxide, land use change and climate change impact forest growth, crop yield, and carbon storage. My most recent publication explores how the carbon and nitrogen cycles will affect future streamflow in U.S. river basins by regulating plant transpiration, and I have previously focused on the role of near-surface ozone on vegetation productivity and carbon sequestration. In conjunction with my Lehigh colleagues, I would like to explore a) how hydrological changes in the future might affect regional water quality and sedimentation issues, b) link remote sensing measurements of the cryosphere and land surface into our models, and c) explore hydrological and ecological issues relevant to the Holocene and Pleistocene glacial cycles.



Percent change in runoff between future (2070-2099 mean) and baseline (1970-1999 mean) for U.S. temperate forests. The four cases represent different climate models and different economic scenarios. The change in runoff due to climate results from both changes in precipitation and increases in evaporation due to warming. Higher atmospheric CO<sub>2</sub> concentrations reduce transpiration due to reduced stomatal conductance, thereby increasing runoff. Nitrogen-limitation and ozone damage both act to reduce photosynthesis, thereby limiting transpiration and increasing runoff.

**Eva Enkelmann, Research Scientist**

The St. Elias orogen in southeast Alaska is the Earth's highest coastal mountain range and the research focus of a large multidisciplinary *Continental Dynamic* project of the NSF (STEEP, <http://www.ig.utexas.edu/steep/>). The orogen is formed by the ongoing collision of the Yakutat terrane with the North American continent, into the tectonic corner formed by the dextral Fairweather transform fault and the Aleutian subduction zone. Because of the high elevation, high latitude, and proximity to the Pacific Ocean, the St. Elias mountain

range is heavily ice covered and erosion processes are mainly glacial. This area thus provides an excellent setting for studying coupling between deformation, erosion, and climate. I am using low-temperature thermochronometers to study the exhumation history of the St. Elias orogen.

Thermochronological studies on bedrock samples show a strong correlation between erosion and climate, i.e. young cooling ages at the southern flanks of the orogen where precipitation rates exceed 5000 mm/yr, but old cooling ages at the northern flanks (<1500 mm/yr precipitation). Together with Peter Zeitler, I employed a complementary sampling approach involving fission-track and U/Pb dating of detrital zircons from Recent glacial sediments in order to obtain information about the substantial portions of the orogen that are ice-covered. We find that in general fission-track ages of zircons in glacial sediments are only moderately young along orogenic strike (> 10 Ma). However, the Seward-Malaspina Glacier transports a substantial fraction of young zircon grains < 3 Ma, and a number of grains give ages as young as 0.4 Ma. This glacial system must tap a zone of focused rock uplift and erosion that is collocated with the orogen's area of highest relief, and high seismicity, in the transition from subduction to transform tectonics. These new results are suggestive of glacially mediated coupling of rock uplift and erosion, and may indicate incipient development of a 'tectonic aneurysm' involving thermomechanically mediated strain localization by erosion.



*The Tyndall Glacier, transporting sediments from the Mt. St. Elias (~5500m) to the Pacific.*



*Taking a peat core from a fen on the Kenai Peninsula.. Peat coring is all manual labor, so we were trying to drive the device into the ground to our desired depth level (with this corer, the peat is extracted in 1-m long drives). It gets harder if the peat is very dense or decomposed, and when you hit the mineral layer below the peat, added weight helps!*

### Miriam Jones, Research Scientist



Miriam Jones is a new post-doctoral research associate working with Zicheng Yu on Holocene peatland carbon dynamics. She received her Bachelor's degree from Barnard College in New York City in French and Earth Science. Subsequently, she moved to the Kenai Peninsula, Alaska to work for the Kenai Watershed Forum, a research-based non-profit organization focused on maintaining the health of the Kenai watershed. After a year, she returned to graduate school, and this past spring received her PhD from Lamont-Doherty Earth Observatory of Columbia University in paleoclimatology and ecology. She studied Holocene ecosystem response to climate change by sampling peat cores for pollen, plant macrofossils, organic matter content, and stable carbon and nitrogen isotopes.

Boreal peatlands are an important component of the global carbon cycle, acting as a significant carbon store during the Holocene (the last 11,500 yrs). The reason for this is that the water table remains close to the surface, therefore minimizing aerobic decomposition. High latitudes are particularly sensitive to climate change, and increased evapotranspiration due to warming may change these peatlands from a carbon sink to a carbon source in the coming years. Working with Zicheng Yu, her research attempts to understand the controlling factors, including climate (temperature, precipitation, relative humidity, cloudiness), vegetation quality, and ground-water and nutrient input, on long-term carbon storage and carbon accumulation rates, by extracting peat cores and analyzing them for bulk density, organic matter content, and plant macrofossils. Previous work from peatland sites on the Kenai Peninsula in south-central Alaska indicates that the early Holocene was a particularly good time for lateral peatland expansion and vertical peat accumulation. This period of the Holocene was a time of warmer than present temperatures, resulting from increased solar insolation during the growing season. Using a combination of upland and peatland pollen assemblages, she is currently working to understand the nature of moisture availability at that time. She is also working on a site near Fairbanks, Alaska to understand how melting permafrost (thermokarst) influences peatland carbon storage.

### Bruce Idleman, Senior Research Scientist



*Sampling the Arkose Ridge Formation, southern Talkeetna Mountains forearc basin*

Collisions involving volcanic arcs have been an important process for building the continents throughout most of geologic time. Sediments deposited in adjacent forearc and backarc basins are sometimes preserved in such collisional zones and provide a rich record of the tectonic processes operative during collision. As a geochronologist, I have been using U-Pb and Ar/Ar dating techniques to study the timing of sedimentation and volcanism in ancient arc-related basins and to trace the origins of the individual grains in the sediments. An ongoing focus of my research has been the well-studied Ordovician arc-continent collision zone exposed along the western margin of the Appalachian-Caledonian mountain system. Working in sedimentary basins in western Newfoundland and Ireland, I have shown that regional exhumation of the collision zone, locally to depths of 15 km or more, is clearly recorded in the detrital geochronology of the basinal sediments. The geochronological data suggest that this collision spanned no more than 5-7 million years, making it one of the most rapid large-scale tectonic events documented on Earth.

Together with colleagues from Purdue and Bucknell Universities, I have recently begun a similar project to study the Early Cenozoic Talkeetna Mountains forearc basin of south-central Alaska, one of the world's best-preserved examples of a continental forearc basin. In addition to helping clarify the history of continental growth and terrane amalgamation in southern Alaska, we anticipate that the project will contribute to our understanding of the adjacent, largely buried Cook Inlet basin, the second-largest hydrocarbon province in Alaska.

## Bruce Hargreaves, bio-optics expert, on 6-week Southern Ocean Cruise



The Earth's oceans influence greenhouse gases by exchanging  $\text{CO}_2$  with the atmosphere. Processes influencing  $\text{CO}_2$  flux at the air-sea interface include wind, waves, and the  $\text{CO}_2$  partial pressure at the water surface. Upwelling of deep water and the biology of marine organisms influence the partial pressure of  $\text{CO}_2$  near the surface. When phytoplankton cells (microscopic plant-like organisms) undergo photosynthesis they take up  $\text{CO}_2$  from the water and reduce the  $\text{CO}_2$  partial pressure. Respiration by living organisms reverses this uptake.

Ocean models of  $\text{CO}_2$  exchange and transport must thus account for the biological processes of photosynthesis and respiration. If water or organisms that incorporate carbon from the atmosphere then sink below the upper mixed layer, the resulting downward flux can offset  $\text{CO}_2$  additions to the atmosphere caused by human activities.

The Southern Ocean Gas Exchange Experiment (<http://so-gasex.org/>) was jointly funded by NASA,

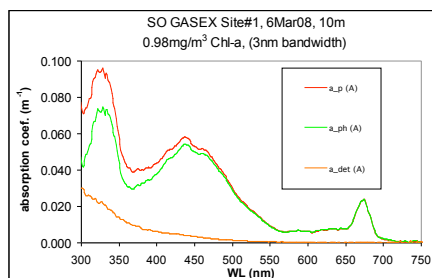
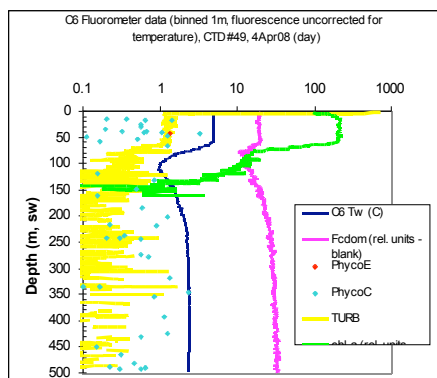


NOAA, and NSF to explore the influence of wind, waves, and biology on greenhouse gas flux in a region known for extreme weather, upwelling of low- $\text{CO}_2$  water, and significant but iron-limited photosynthesis. I departed on the NOAA ship R/V Brown on 29 February 2008 from Punta Arenas, Chile (map at left shows location each day) with 31 other scientists, a similar number of crew members, and an Argentine observer. Our destination was several hundred km north of South Georgia Island. Our overall goal

was to create and then follow a dual-tracer patch ( $^3\text{He}$  and  $\text{SF}_6$ ) while measuring every conceivable physical and biological parameter related to gas flux and waiting for big storms to blow through the site. My specific goal was to help estimate daily water column photosynthesis. I did this by measuring incident photosynthetic light and phytoplankton properties in the water column (using fluorescence as a proxy for biomass and spectral absorption of particles in water samples with new instruments that I developed or improved) while several other scientists used  $^{14}\text{CO}_2$  to measure photosynthesis in water samples

While coping with numerous ship problems (one caused us to leave the first patch for S. Georgia Island to avoid a big storm), we deployed two tracer patches and returned to port (Montevideo, Uruguay) on 12 April. My water column data (fluorescence of phytoplankton and dissolved organic matter, graph below left) revealed that we were working over a water mass distinctly different from that at the surface. My 300+ phytoplankton absorbance spectra (sample below right) compared well with traditional chlorophyll concentrations and showed variations with depth and time that will aid our modeling and help to calibrate satellite models for estimating

absorbance and photosynthesis from Space. Processing and integrating our large data sets is still underway.



NOAA RESEARCH VESSEL  
RONALD H. BROWN  
(275 FT LONG)

"OUR OVERALL GOAL WAS  
TO CREATE AND THEN  
FOLLOW A DUAL-TRACER  
PATCH ( $^3\text{He}$  AND  $\text{SF}_6$ )  
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GAS FLUX AND WAITING FOR  
BIG STORMS TO BLOW  
THROUGH..."



LOWERING  $\text{CO}_2$  BUOY  
INTO THE TRACER PATCH



20-30 FOOT WAVES  
DURING RETURN TO PORT



## Alumni in Houston

During the annual meeting of the Geological Society of America in Houston this past October EES sponsored a gathering to touch base and catch up with alumni, many of which are in the Houston area working in energy-related fields. Monday evenings at the GSA meeting are traditionally devoted to alumni gatherings and given the success of the Lehigh event, we will want to make this a tradition for which everyone can look forward. We met at the Flying Saucer bar in downtown Houston and enjoyed lively conversation and networking fueled by a wide selection of tasty finger foods and over 100 beers from around the world. The gathering was an opportunity to speak directly to alumni regarding the "state of the Department", lay out Department goals for the next 5-10 years, and identify needs where alumni can help and become involved. More importantly, it provided a venue for networking among alumni, faculty, current, and recently graduated students that we hope helps build the strength and vitality of our alumni family. We look forward and welcome you to our next gathering at the 2009 annual meeting in Portland, Oregon.



**Steve Randall, Occidental Energy, Luke Wilson (MS'08), and Kathy McDonald, Eouthwestern Energy.**



**Prof. David Anastasio and Jeff Simmons, Exxon/Mobil**



**Al (aka Alione) Benimoff (PhD'84) and Gary Lash (PhD'80)**



**Mike Fox (BS'97), Patrick Belmont (PhD'07), and Kurt Frankel (MS'02)**



**Ryan McKeon (PhD candidate) and Karl Wegmann (PhD'08)**



**Amy Ondrus (MS'97), Joanna Troy (MS'09), and our illustrious Chair, Prof. Frank Pazzaglia**

NETWORKING OPENS CAREER  
DOORS FOR RECENT EES  
GRADUATES, AND ENGAGES  
ALUMNI DIRECTLY WITH THE  
DEPARTMENTAL MISSION



The EES graduate program is a signature of our Department; it enhances the reputation of EES faculty, it is the most important component of EES scholarly output, and it partially underwrites the cost of undergraduate education through the support of laboratories and research projects. The MS program recruits nationally and the PhD program recruits internationally with ~80% of students being US citizens. The 2008 recruiting season was typical in that we matriculated 11 students out of 17 offers reflecting a long term average of 60% acceptance rate. Students who decided not to come to Lehigh were lost to Yale, Princeton, Brown, Scripps, and University of Maryland. We have high expectations for MS and PhD students to attend professional conferences and publish their research. PhD students are further expected to participate in the procurement of sponsored research as they develop their research proposal. Doctoral graduates are competitive for employment in their respective fields including recent placement in professorships at North Carolina State University, Ohio University, Augustana College, Dalhousie University, University of Florida, University of Texas, Montclair State University, and Slippery Rock University of Pennsylvania. The size of our graduate program is currently limited by admission selectivity and financial aid resources; we would like to grow our program by 25-30% through the addition of high caliber doctoral applicants. To be competitive, we must fully fund graduate students for the normal duration of their degrees with MS candidates receiving 21-24 months and PhD candidates receiving 4- 5 years of support

### Current Grads and their Interests

**Matt Bennett:** Studying the comparison of stream morphology between a modern urbanized watershed versus a virgin forested watershed through the use of in-field surveys and the use of high resolution LIDAR.

*Advisor, Pazzaglia*

**Dario Bilardello:** Ph.D. research has focused on correcting the paleomagnetic inclination error of red bed units from the Maritime Provinces of Canada, in order to determine the original paleolatitudes at which the rocks formed. *Advisor, Kodama*

**Lucy Brown:** Using local seismicity to study strain in the eastern Himalayan syntaxis. *Advisors, Meltzer and Zeitler*

**Michael Bubb:** Studying various aspects of the Mercury cycle in the contaminated wetlands of northern NJ. Research includes examining causes into Mercury emission from aquatic vegetation and tidal mud flats.

*Advisor, Peters*

**Johanna Blake:** Using geochemistry to analyze water and/or soil compositions in the area surrounding the Palmerton Zinc Smelting Plant. *Advisor, Peters*

**Jill Burrows:** Analyzing water samples collected from springs along the Kittatinny Ridge near Palmerton, PA to determine the flux of metal contaminants in the groundwater during storm events. *Advisor, Peters*

**Andrea Daman:** Sampling 200 Ma rocks from the Colorado Plateau for a paleomagnetic study that involves correcting for inclination shallowing and finding the magnetic pole for those rocks, which will be compared to paleomagnetic data from the same aged rocks from the rift basins of the Northeastern US.

*Advisor, Kodama*

**Chris Dempsey:** Measuring the amount of labile carbon in different watersheds along the Lehigh River through the use of bioreactors. *Advisor, Morris*

**Matt Gentoso:** Looking at the microfabrics of flute and drumlin deposits in North Central NY to analyze the magnetic anisotropy of the grains in an attempt to see if grain axes align with flow direction of the Laurentide Ice Sheet. *Advisor, Evenson*

**Andrew Gonyo:** Examining lake sediments using stable isotopes and sedimentary proxies in order to reconstruct paleoclimatic and paleoenvironmental variability during the Late Holocene in South-Central Alaska. *Advisors, Bebout and Yu*

**Kellen Gunderson:** Investigating the modulating effect of surface processes on deformation rates in the Northern Apennines, Italy. *Advisors, Anastasio and Pazzaglia*

**Alex Ireland:** Studying the developmental history and modern ecology of a kettle-hole quaking mire to elucidate the drivers of floating peat mat initiation and expansion and improve upon accepted models of terrestrialization. *Advisor, Booth*

**Julie Loisel:** Interests are currently focused on the reconstruction of past environmental changes derived from peatland archives, the effects of climate change on carbon accumulation rates within these ecosystems, and their present-day ecology, hydrology, and biogeography. *Advisor, Yu*

**Ryan McKeon:** Focusing on the tectonic and erosive processes that control the development of topography using geochronology and quantitative landscape analysis, in addition to developing new thermochronologic techniques. *Advisors, Pazzaglia and Zeitler*

**Erin Markel:** Developing a calibration dataset of testate amoebae and stable carbon isotopes that will enable reconstruction of mean growing season water table depth in South-Central Alaskan peatlands. *Advisors, Booth and Ramage*





**Patricia Monahan:** Exploring spatial and temporal passive microwave AMSR-E brightness temperature measurements and diurnal contrasts to establish thresholds indicating surface melt and refreeze on the Southern Patagonian Icefield, corroborated with hydrologic data and ground truth measurements. Melt condition timing correlated with streamflow variability may provide a means to monitor glacial-fed streamflow remotely. *Advisor, Ramage*

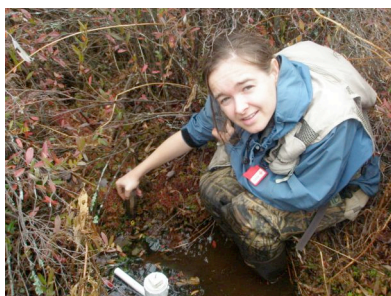
**Annie Palya:** Using stable isotope geochemistry and metamorphic petrology to study nitrogen isotope behavior during the partial melting of metasedimentary rocks from Australia and New England. *Advisor, Zeitler*

**Kevin Smith:** Studying distribution, fate, transport, and potential remediation of metals and other toxins in soils, surface water, and groundwater originating from a former zinc smelter in Palmerton, PA. *Advisor, Peters*

**Maura Sullivan:** Investigating patterns of vegetation through time, in particular in relation to changing hydrologic conditions. Focusing on refining the calibration of testate amoebae as proxies for hydroclimate and the application of this proxy in interpreting paleo-ecological events. *Advisor, Booth*



*Dario Bilardello sampling in New Brunswick.*



*Maura Sullivan collecting testate amoebae samples and environmental data from Tannersville Bog.*

**Ken Wiles:** Studying light properties of particles in bodies of freshwater. Comparing streams differing in particle types to account for variations in optics that may be related to organic carbon and iron content. *Advisor, Hargreaves*

**Jennifer Wollenberg:** Focusing of factors affecting the rate of mercury emission from lakes and wetlands to the atmosphere. Specific areas of interest include the effects of duckweed cover, lake turnover, and suspended particulates on this process. An improved understanding of these factors is an important step toward constraining the contribution of lakes and wetlands to the global mercury cycle. *Advisor, Peters*

**Elizabeth Wolyniak:** Researching the effect of natural environmental biofilms on the transport and infectivity of Cryptosporidium, a gastrointestinal parasite found in 55% of surface waters. Starting a field project to examine the possibility of using biofilms as a bioindicator of Cryptosporidium in a watershed. *Advisors, Hargreaves and Jellison (CEE).*

**Ashma Vaidya:** Researching bio-optics of phytoplankton. Interested in developing expertise in instrumentation and remote sensing methods to measure algal blooms to help with water quality problems in my home country, Nepal. *Advisor, Hargreaves*



*Jennifer Wollenberg sampling at Lake Lacawac*





## STEPS

*an \$85 million initiative to create a collaborative, multidisciplinary platform providing extraordinary opportunities for undergraduate and graduate education, as well as world-class research, resulting in innovative solutions to global challenges*

The excavation for the STEPS building has given us a window into the soil and rock stratigraphy that underlies the lower Lehigh campus. At the base of the excavation and in the borehole cuttings that penetrate some 10 m deeper, the excavation has uncovered a thick, but uneven layer of saprolite derived primarily from weathered Leithsville Shale. That saprolite is mixed locally with deeply weathered pods of granitic gneiss. Apparently, the STEPS foundation is near the basement-cover contact along the northeast flank of South Mountain. An irregular unconformity above the saprolite separates it from an overlying, red-weathered till mixed locally with some stratified sand and gravel. These deposits are remnants of a pre-Illinoian glaciation that extended into the Lehigh Valley probably a million years ago or more. Equivalent deposits are known to be paleomagnetically reversed (> 780 k.y.) where preserved in northeastern Pennsylvania. The till is overlain by one or more generations of polymictic colluvium derived from the till and the hillside. We collected some samples of the stratified sand in a sealed metal tube and hope to have them submitted for optically stimulated luminescence analysis to determine their age.

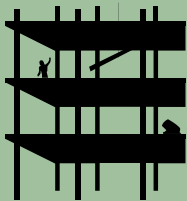


*Photo showing some of the sandy till sampled for OSL analysis*



TO SEE LIVE PROGRESS OF THE NEW STEPS BUILDING GO TO:

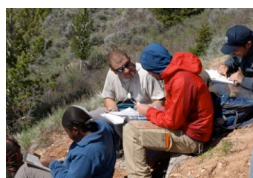
[WWW.STEPSCAM.LEHIGH.EDU/STEPS.SHTML](http://WWW.STEPSCAM.LEHIGH.EDU/STEPS.SHTML)



The new facility will encourage collaborative learning and spark meaningful discussions in classrooms, laboratories and offices—a place where engineers and natural and social scientists work seamlessly across disciplinary boundaries. The facility will be a "green" building and constructed with the goal of LEED certification (Leadership in Energy and Environmental Design), the gold standard for sustainable architecture in the U.S.

One of the keys to undergraduate success in today's society is the ability to think broadly and appreciate the career opportunities that are opened through cultural diversity and global literacy. Traditionally, Earth Scientists have always been leaders in global literacy because our work is field-intensive, rarely restricted to our backyard, and requires interpersonal skills including foreign languages. Following from a faculty-lead effort to synthesize the need for greater global literacy at Lehigh co-authored by EES faculty, the University has laid out a five-point plan to be realized by 2013 (see: [http://www.lehigh.edu/~inprv/Global\\_Lehigh/](http://www.lehigh.edu/~inprv/Global_Lehigh/)). EES is helping lead the way in making Lehigh a more global university by building upon programs that we already do well. These include the summer field camp, the Costa Rica sustainable development course, and the annual Department field trip. All of these activities provide venues for alumni involvement in time, experience, and financial support. Down the road, the Department is looking to offer a full Lehigh-lead semester abroad which can also be enhanced by alumni talents, particularly those located near the study abroad program. Please use the next page to direct your financial support to these programs, and contact Department Chair Frank Pazzaglia for more information on how you might become involve

### Field Camp, 2008 (see <http://www.lehigh.edu/~fjp3/fieldcamp/index.html>)



*Claudio Berti (Italy) instructing at Field Camp*



*The Red Hills of Wyoming – remember this anticline?*



*Ed Evenson and Ken Kodama in the camp kitchen*

### Costa Rica Study Abroad (<http://www.lehigh.edu/studyabroad/lehighincostarica.htm>)



*Research/Teaching facility in Costa Rica*



*Class at butterfly preserve*

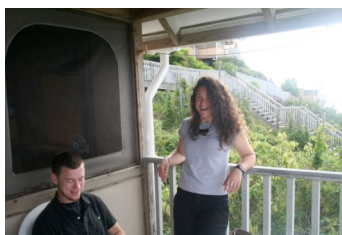


*Students operating a tapache*

### Department Field Trip to U.S. Virgin Islands National Park, May, 2008



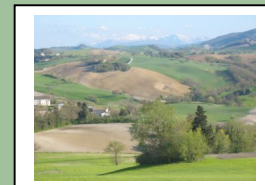
*Students on the Trail in Virgin Islands N.P.*



*Students relaxing in bungalows, Virgin Islands N.P.*



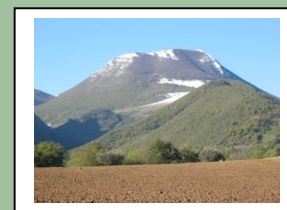
*Frasassi*



*Marche countryside*



*K-T boundary, Gubbio*



*Mt. San Vicino, Frontale*

## AN INVITATION TO GET INVOLVED IN YOUR DEPARTMENT

The faculty and staff would like to extend an invitation to alumni to stay in contact with EES and to get involved with your Department. Contact us and let us know how you would like to be involved. Some activities and events open to all alumni include:

- ◆ The weekly Friday lunch and seminar (11AM-1:PM)
- ◆ The Graduate Student Seminar (typically the second week in February)
- ◆ Undergraduate and Graduate thesis defenses (typically near the end of the semester)
- ◆ Graduation (3<sup>rd</sup> Monday in May)
- ◆ Field Camp (see <http://www.lehigh.edu/~fjp3/fieldcamp/index.html> for the schedule)
- ◆ The Department Field Trip and field trips during the semester.

Many of the programs we offer in EES that allow us to excel in education and research are made possible by endowments and donations established by alumni. We are always looking to augment our resource base for graduate and undergraduate research, EES Field Camp, faculty development, and/or Departmental labs, equipment, and educational facilities. If you are in a position to donate, please fill out the form below with your gift and send it to us. We will acknowledge receipt as soon as it arrives. Please make your check payable to Lehigh University and we thank you in advance for your consideration and support.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

◆ I would like to make a donation to support the EES graduate program in the amount of \$ \_\_\_\_\_

◆ I would like to make a donation to support the EES undergrad program in the amount of \$ \_\_\_\_\_

◆ I would like to make a donation to support EES Field Camp in the amount of \$ \_\_\_\_\_

◆ I would like to make a donation to support EES faculty development in the amount of \$ \_\_\_\_\_

◆ I would like to make a donation to support Departmental facilities in the amount of \$ \_\_\_\_\_

◆ I prefer to make an unrestricted gift of \$ \_\_\_\_\_

Total personal donation \$ \_\_\_\_\_

Employer matching gift (if applicable, include employers matching gift form) \$ \_\_\_\_\_

**Grand Total** \$ \_\_\_\_\_

**Send the completed form with your check to:**

**Laura Cambiotti, Department of Earth and Environmental Sciences, Lehigh University,  
31 Williams Drive, Bethlehem, PA 18015-3126**



**David Anastasio**, in collaboration with Al Bodzin (College of Education) and Dork Sahagian, has landed funding through the Toyota Fdn for K-12 geospatial education. This grant will allow the Department to replace its aging file server.

Gray Bebout has installed a new nitrogen analyzer line in his lab being used by graduate and undergraduate students to investigate, among other things, the geochemical signature of early life in Precambrian pillow basalts.

BOB BOOTH AND ZICHENG YU HAVE BUILT AN IMPRESSIVE, INTEGRATED PROGRAM IN PALEOECOLOGY AND PALEOCLIMATOLOGY THAT FINDS THEM, THEIR POST-DOCS, AND THEIR STUDENTS FREQUENTLY IN CHINA, ALASKA, AND ELSEWHERE.

*Ed Evenson has re-opened his research on Darwin's boulders in Tierra del Fuego and has created a popular presentation on Darwin as a foundational geoscientist that finds him in frequent demand.*

Ben Felzer is learning to love sleepless nights, finicky compilers, and demanding students in his first semester as an assistant professor!

**Bruce Hargreaves** completed a nearly 2-month long ocean cruise to the South Pacific in Spring 2008 as chief scientist investigating ocean productivity.

**Ken Kodama** has teamed up with Frank Pazzaglia and Dave Anastasio on a new 3-year active tectonics project in northern Italy.

*Anne Meltzer is the Dean and somehow manages to remain research active, focusing most recently on the crustal structure of southeast Tibet.*

DON MORRIS HAS A BUMPER CROP OF STUDENTS IN THE COSTA RICA COURSE FOR 2008—09. HE IS PLANNING TO DEVELOP A NEW CURRICULUM ROOTED IN THE PRESENT COURSE THAT WILL GIVE NATURAL SCIENCE CREDIT TO EES MAJORS AND QUALIFY AS THEIR INTERNATIONAL EXPERIENCE.

**Carl Moses** is in the Provost's Office, but still finds time to come over to EES to teach, as he did for the EES 004 class in Fall 2009.

STEVE PETERS IS A NEW FATHER AND WAS NAMED A FRANK HOOKE ASSISTANT PROFESSOR FOR THE 2008-09 ACADEMIC YEAR. THIS AWARD RECOGNIZES OUTSTANDING JUNIOR SCHOLAR-TEACHERS WHO BOTH CONDUCT SCHOLARSHIP AT A HIGH LEVEL AND FOSTER PERSONAL INTERACTION AND MENTORING RELATIONSHIPS WITH STUDENTS.

**Frank Pazzaglia** is wondering how long this chairmanship thing lasts.....

*Joan Ramage Macdonald is a new mother, returning from sabbatical leave and a productive field season in the Yukon, with husband and baby in tow. She, along with graduate student Maura Sullivan, also a new mom, recently published an article in the Chronicle of Higher Education about the challenges faced by mothers in the field (<http://chronicle.com/jobs/news/2008/10/2008102401c.htm>).*

**Dork Sahagian** continues to lead the Environmental Initiative and is gearing-up for the transition to the new STEPS facility.

**Peter Zeitler** finds a way to balance leadership in tectonics and geochronology while also being the head of the innovative South Mountain College undergrad program (<http://cas.lehigh.edu/casweb/content/default.aspx?pageid=329>).

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