Fall 2004

Geogram 2004

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Western Kentucky University

WKU Department of Geography and Geology

GEOGRAM

Fall 2004

The Annual Newsletter of the Department of Geography and Geology at Western Kentucky University

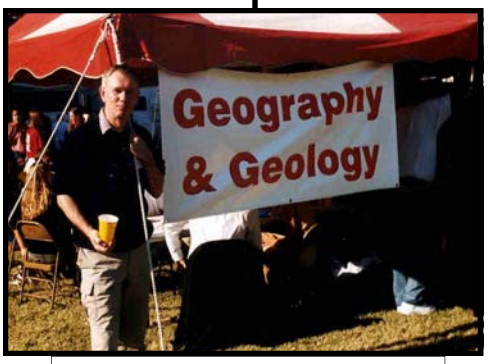
A Letter from the Department Chair

Dear Friends,

2003-2004 proved to be another very successful year for the Department of Geography and Geology. Highlights of the year's accomplishments include the following events and activities:

☺ The Department's Geography program has been designated for "enhancement" in WKU's program review process just completed for the 1998-2003 period.

☺ 54 students attended eleven professional meetings and conferences, with 45 students presenting research papers or posters.



☺ Majors and minors in the Department increased by 25 % over the previous year.

☺ 57 students participated in study-abroad programs, field camps, and field trips during the year, with an additional 200+ students visiting Mammoth Cave National Park as a requirement for the Physical Geography Gen. Ed. course.

☺ Faculty and students were featured 30+ times in media print and online articles.

☺ The Department awarded 21 GIS Certificates this year, while another 24 students have completed half of the certificate requirements.

☺ Three students earned first-place awards at the annual Sigma Xi student conference; 4 students won awards at the Kentucky Science Academy meeting.

☺ Eight faculty visited 16 overseas locations for research, professional development, conferences, study-abroad programs, study tours, and collaborative activities, including three separate visits to China.

☺ Michael May won the Ogden College Award for Public Service, in recognition of his efforts to promote sustainable development in the community and region.

☺ 54 students were actively engaged in applied research under faculty supervision through the ARTP and through externally funded research projects.

☺ Six undergraduate and graduate students have been accepted to advanced graduate programs beginning this Fall.

☺ Grant funds from the National Oceanic and Atmospheric Administration (NOAA), along with internal support, secured an advanced Mesoscale Meteorological Model to enhance student and faculty research.

☺ A Geology alumnus was featured prominently in a Smithsonian *Air and Space Magazine* article on asteroid impacts.

☺ Andrew Wulff won a geology research award from the Oak Ridge Associated Universities for a multidisciplinary project in Java, Indonesia.

Faculty continued to excel in scholarship, research, and professional development, convening

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and/or participating in myriad professional workshops and presenting approximately 45 papers at local, regional, national, and international conferences. Faculty also were significantly engaged with the local community, serving on committees, task forces, running for public office, participating in WKU-sponsored community outreach events such as the *Far Away Places* series at Barnes and Noble, sharing geoscience expertise on WKYU-FM's Midday Edition program, and giving talks at churches, community organizations, and for service groups.

Three faculty also served as editor or co-editor of professional academic journals, eight faculty reviewed manuscripts for academic journals or publishers, and one faculty is a co-author of a chapter in a new textbook titled *Geography in America in the 21st Century,* published by Oxford University Press. Faculty research articles appeared in such diverse outlets as *Applied Geography, the International Journal of Climatology*, the *Journal of Geoscience Education*, and the *Journal of Hydrometeorology*, among others. Twelve faculty research articles or book chapters are either currently in review, revision, or awaiting publication; one of the Department's newest faculty published a chapter titled "The Colorado River Delta of Mexico: Endangered Species Refuge" in *WorldMinds: Geographical Perspectives on 100 Problems*.

At the end of the Spring 2004 semester, the Department recorded **211** majors in geography (172 in 2003), **46** in geology (38 in 2003), and **72** total minors (52 in 2003). ***This is a 25 percent increase in declared majors and minors over the 2002-2003 academic year***. The Department graduated 31 students from its major programs between August 2003 and May 2004, and it has a target of 40 new majors each year to maintain the numerical strength of its programs.

The students and faculty of the Department of Geography and Geology again have performed exceedingly well over the past year. We have each and every one of you to thank for helping to build the Department into what it has become--the best in the state and one of the very best in the nation. We look forward to hearing from you this coming year.

Best Wishes,

David J. Keeling, Department Head

David J. Keeling

*** HOMECOMING ***

Saturday, October 23, 2004

** Special Event: Geography and Geology Departmental Tour (Including our new GIS lab and Centers for Applied Research)
Time: 1:00 - 2:00pm
Location: Meet on 3rd Floor EST Building

** **Special Event: Homecoming Tailgating**
Time: 2 p.m. - 4 p.m.
Location: DUC South Lawn - Join us at the ***Geography and Geology Alumni Tent***.
Enjoy good food and old friends. Meet the departmental faculty and current students.

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VISIT THE DEPARTMENT'S WEBWORLD

The Department's homepage has again undergone significant updating, with a revamped home page and a redesigned information portal. In addition to the outstanding Kentucky Climate Center site, originally developed by Glen Conner, our State Climatologist Emeritus, and continued by current State Climatologist Stuart Foster, the homepage provides complete program and course information, with links to myriad geography and geology related pages. For instance, pointing your browser to **http://www.wku.edu/geoweb/** will take you to the index page. From here, you can link to all the different types of courses offered by the Department. Many of the course descriptions will have links to the syllabus or to the Professor's personal homepage, to a variety of study guides, and eventually to interactive activities. From the homepage, you can also explore all of the different program tracks offered by the Department and link back and forth to the individual course descriptions within each track. There is always more construction to do, but we hope you find the material available so far informative and useful. Email us with your comments!! We'd love to hear from you.

http://www.wku.edu/geoweb/

Outstanding Geography Students, 2003-04

The Department of Geography and Geography takes pride every year in the quality of its graduating seniors. Students graduating from the various program tracks offered by the Department must pass rigorous course requirements, satisfy applied skills components, and maintain their overall GPAs. All this is often in addition to outside employment demands, public service, family duties, and service to the Department and College. Each year, the Department recognizes its outstanding seniors at a public presentation by presenting them with awards and certificates. The recipients of the Department's highest honors also receive recognition at the University Awards Ceremony.

For the 2003-04 academic year, Mollie Laird received the Outstanding Geology Senior Award, presented by Dr Andrew Wulff. David Logan received the Ronald R. Dilamarter Outstanding Senior in Geography Award, presented by Dr Stuart Foster. Mark Graham and Jenna Medlin both received the Outstanding Geoscience Graduate Student award, presented by Drs Katie Algeo and John All respectively.

Dr David Keeling presents Mark Graham with the Outstanding Graduate in Geoscience Award at the Graduate School Award Ceremony, April 2004

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Congratulations to ALL our Outstanding Students!

Introducing Our Newest Faculty Member:

Dr. Jun Yan

Dr Jun Yan joins the WKU faculty this fall after receiving a Ph.D. in GIS from the State University of New York at Buffalo (UB). Dr Yan and his wife, Faith Sun, are looking forward to exploring the Bowling Green area and getting to know the community. They like reading books, listening to country music, and watching movies. Mostly, they enjoy raising their lovely twin boys, David and Daniel, who are as excited as their parents at starting their new lives in Bowling Green. Dr Yan is also a huge sports fan. He plays basketball once for a while.

Dr. Yan's professional interests range from the theoretical development of GIScience to applications of GIS technologies and spatial quantitative methods, particularly in urban and regional studies. One of his interests is the adoption of computational methods in the geography domain. His current research activities mainly involve the field of geographic knowledge discovery in large geospatial databases. Specifically, he has adopted a special type of neural networks, called Self-Organizing Maps (SOM), in uncovering novel

geographic patterns and structures embedded in spatial interaction (SI) databases.

Dr Yan is also interested in the applications of GIS and other information technologies in solving many real-world geographic problems. Particularly, he works in the areas related to urban & regional planning, locational analysis, market research, criminology, and transportation.

Dr Yan will be teaching a World Regional Geographic course and two upper level GIS certificate courses for Fall 2004, and will be developing courses in transportation, urban & regional planning, and other advanced GIS courses. He is looking forward to working with students who are interested in pursuing geographic and GIS as professional career!

COMMENTARY –

Free Trade and Global Terrorism: The Importance of Geography

By David J. Keeling

As politicians debate the implications of the recently published 9/11 Commission Report, NAFTA celebrates its 10th anniversary, and an historic Free Trade Agreement with Central America is signed, few questions are being raised about the links between free trade and global terrorism. The nature and implications of regional and global differences in the impact of trade policies and practices routinely have been minimized by those who seek to understand the links between development and terrorism. Although rhetoric about trade relationships, tariffs, subsidies, and the impacts of labor and job redistribution runs high, discussions about the geographic or spatial impacts of free or global trade are barely heard. Regional trade-association acronyms such as NAFTA, CAFTA, EU, APEC, or ECOWAS presume an unproblematic and homogeneous environment for trade relationships. Indeed, marginalized peoples in marginalized regions of the world often are explained away as simple economic units than can be "developed" with the right combination of free trade, financial reform, and democracy.

Some commentators have gone so far as to announce the end of the nation-state as we know it and the elimination of geography as a barrier to free trade. Even the 9/11 Commission argued that modern terrorist threats are defined more by societal fault lines than by the boundaries between states, intimating that political-territorial units are not as important as they once were. Socio-economic differences between Chiapas and Tijuana, or between southern Afghanistan and Kabul, can be eliminated by open and free global trade, with the stark realities of the internal geographies of political states dismissed as minor challenges to the forces of globalization. The conventional mantra is that globalization strategies, combined with strong regional trade alliances, will eliminate the tyranny of space and provide equal trade opportunities for all societies, thus reducing the threat of terrorism. Barely acknowledged by free-trade proponents, however, is the reality that the world's 210-plus political states continue to exert significant sovereignty over internal and external relations, including trade. Also frequently ignored are the geographies of difference that shape all states, from the most advanced industrial centers of the world to backwater societies struggling with disease, isolation, and inadequate infrastructure. The global reality is that a powerful relationship exists between trade, terrorism, and the geographies of difference.

Understanding the geography of free trade, globalization, and terrorism becomes critical when development challenges are analyzed in terms of regional differences. Economic models developed for Afghanistan, Iraq, Sudan, or Nigeria, for instance, typically assume a uniform national geography, with regional differences explained away simplistically and uncritically. Political and economic analyses of Iraq that focus on introducing democracy and building an economy that can be regionally and globally integrated tend to ignore the country's internal geographies. Not only are there geographically significant ethnic and religious differences that argue against a U.S.-styled democracy, there are also major physical, resource, and infrastructure disparities that require a level of spatial development not anticipated by current plans.

In regions such as Africa and Latin America, geographic disparities are so profound both within and between countries that an investment of at least two trillion dollars in basic infrastructure would be required just to prepare the regions adequately to take advantage of free trade opportunities.

Over the past two decades, the United States has championed the principles of free trade, globalization, and democracy internationally with barely a hint of a basic geographic understanding of national and regional differences. What the 9/11 Commission cites as a failure of imagination is, in reality, a stunning level of geographic ignorance about how the world works. Economic collapse in Argentina, terrorist attacks on New York, nuclear rhetoric from North Korea, ethnic butchery in the Sudan, and societal meltdown in Haiti all are symptomatic of policies that demonstrate a profound geographical naiveté about socioeconomic differences within political boundaries and across the globe. Even the advent of new technologies such as Geographical Information and Global Positioning Systems (GIS and GPS) that continue to enhance our knowledge of the evolving global mosaic has not encouraged among planners and policymakers a heightened awareness of spatial differences. Successful free and fair trade, meaningful regional development, and economic integration that improves the lives of all citizens regardless of their geographies can only be achieved if geographic differences are recognized in meaningful ways. To achieve that goal requires policies and strategies that are geographically informed and not geographically ignorant. Until this goal is achieved, the threat of terrorism will remain significant and high.

Note: A Version of this commentary appeared as an Op Ed in the *San Francisco Chronicle*, August 3, 2004, p. B-9. The views expressed by the author do not necessarily represent the views of the Department or university.

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The Kentucky Climate Center

The KENTUCKY CLIMATE CENTER, with help from the Center for Cave and Karst Studies, recently purchased three automated weather stations. Each station will be equipped with sensors to measure air temperature, relative humidity, solar radiation, wind speed and direction, precipitation, and soil moisture. Data will be transmitted and ingested in a database at the Kentucky Climate Center. One of the stations will be installed at the Lost River Cave and Valley. The other two will be located in neighboring counties. Combined with the recently commissioned Climate Reference Network station near Mammoth Cave National Park, these stations will help to provide weather and climate data for the Barren River area. As Dr Foster notes, these new stations will serve two important roles: "first, they complement efforts by the Barren River Area Development District (BRADD) to implement hazard mitigation planning in the region; and second, these stations represent a pilot project through which we can develop expertise in building and maintaining networks." For more information about the Kentucky Climate Center, contact the Kentucky State Climatologist (stuart.foster@wku.edu) at 270-745-5983.

ADVENTURES IN GEOSCIENCE

SALT, SILVER, AND THE SUNDANCE KID: STORIES OF THE BOLIVIAN ANDES

by Michael Trapasso

July 2003 found me in Bolivia. This country of over eight million inhabitants offers a wondrous variety of geography and geology. Its geography is largely high plains surrounded by two mountain ranges: the Sierra Oriental (to the east) and the Sierra Occidental (to the west). Its capital, LaPaz, is the highest capital city in the world, at 4,100 m (13,500 ft.) a.s.l., and beautiful Lake Titicaca is the highest fresh water lake in the world at 3,850 m (12,600 ft.) a.s.l. Exploring at high altitude (and corresponding low pressure) made for some interesting reactions: shortness of breath with minor physical exertion, disposable lighters that wouldn't ignite, and the crystal popped off my wristwatch! Bizarre, amusing, and beautiful all at the same time … that's one way I would describe the Bolivian Andes. I've got many stories to tell, but allow me two.

Salt: Some 60 times larger than the salt flats in Utah are the salt flats at Uyuni in Bolivia's *Altiplano* (high plain). The Altiplano is comprised of large, flat basins all over 3,850 m (12,600 ft.) a.s.l. and surrounded by mountain ranges. In essence, large freshwater lakes like Titicaca, saltwater lakes, and the salt flats at Uyuni, all are trapped within the Altiplano. Here the salt flats stretch out in all directions as far as the eye can see. With over 8,000 sq km (3,100 sq miles) of salt deposits, the view is awesome. This almost alien landscape began to form about 25 million years ago when tectonic forces thrust the Andes Mountains up from sea level. Marine salt deposits were elevated as well. Through intense pressure, the salt was "squeezed through cracks and fissures" to settle on the high plains. During the rainy season (late December to early April), there may be as much as 50 cm (20 inches) of water atop the deposit, making a very shallow salt lake. During the dry season, however, the sunlight reflects off this pure-white expanse of salt. There is water beneath the salt, which at times breaches the surface in what the natives call "ojos de agua" (eyes of water). The subsurface flow of the water, plus the vibrations of the vehicles and activities on the surface, cause the water to gush from the "ojos de agua" like small geysers. Unlike geysers, however, this water is quite cold. One can reach into an "ojo" and break off some perfectly formed salt crystals in their raw cubical form. When walking along the surface one notices strange patterns on the ground. Polygons (mainly hexagonal) appear everywhere on the surface. During the beginning of the dry season the shallow salt lake quickly evaporates, the salt surface begins to crack, and the seams fill in to form this bizarre, extraterrestrial-looking landscape.

The salt flats are interrupted by ancient volcanoes, which rise above the 'white sea' like islands. On these 'islands' you can find lava beds atop marine coral at 3,960 m (13,000 ft.)! One of the largest of these volcanoes is Tunupa. Its elevation allows for glacial ice to cap its peak and its windward slope produces orographic rain. With a steady supply of fresh water, this 'island' can support small communities. Exploring an ancient Inca burial cave proved that Tunupa has supported villages for centuries. At one point, my guide stopped our vehicle out on the white desert and announced it was time for lunch. He set up a folding table and chairs and produced lunch from a styrofoam cooler. We sat there, in the middle of nowhere, eating our lunch, when he said, "Oh my God, I forgot to pack something!" "What?" I asked. He said, "Salt!" We both laughed and took a pinch off the ground.

Silver and the Sundance Kid: In the mining city of Potosí, Cerro Rico (Rich Mountain) was once the largest silver producer in the world! Its precious cargo made an exclusive one-way trip to Spain. Today the mountain is riddled with about 17,000 shafts and, each day, about 8,000 miners work them. Contract miners are supplied by the companies that employ them, but Co-op (independent) miners supply themselves each day from the 'Miner's Market'. This specialized market offers water (of course), coca leaves (to stave off hunger), alcohol (a form of moonshine to ease the pain), cigarettes (for occasional rest breaks), and dynamite (as a tool) all at the same little street-side

stands. I was amazed to find a place, in this "post-911 World," where any person with 2 Bolivianos (about US$0.23) can come away with a stick of dynamite. I laughed when I realized that I could choose among several name brands, and had enough pocket money to buy a whole case. Of course, bringing it home would entail some prison time, so I just smiled and walked away.

The base of this extinct volcano reaches out like a shoreline into Uyuni's sea of salt.

Appropriately enough, my guide and I toured St. Michael's Mine. With coveralls and a hard hat, we descended five levels of the shafts. It reminded me of wild caving, except for the occasional muffled boom and rumble of dynamite in the distance. The thin, dark veins of silver, mixed with zinc and lead, were the targets so diligently sought after. A few hours and two sore knees later we emerged into the sunlight once again. It was a fascinating place to visit, but I wouldn't want to work there.

From the mines at Potosí the silver trains travel to the Federal Mint in the city of Sucre. Along the way lies the sleepy little town of Pulacayo. One day, Butch Cassidy and the Sundance Kid stopped that train, and sleepy Pulacayo awoke to the sound of bullets and dynamite. At great distance I could see the village of San Vincente. It was there that our two 'banditos' met their end (according to the movie anyway). It's funny how all Bolivians know about Butch and Sundance. I guess they've seen the movie too. Like Americans, they enjoy telling their outlaw tales as well.

I did see one movie and television star. It was a delight to drive past the majestic snow-capped mountain known as Huarni Potosí. You all know it well as it's the mountain used as the Paramount Pictures trademark. I smile and think of the Bolivian Andes every time I see it on the screen.

STUDY ABROAD GOES TO THE BRITISH ISLES

By Debbie Kreitzer and Will Blackburn

This summer, nine students, David Keeling, Will Blackburn, and Debbie Kreitzer visited the British Isles as part of the Department of Geography and Geology's annual study abroad program. Students studied Human Geography, Physical Geography, and the Geography of the British Isles. The group left Nashville on June 1st and traveled via Atlanta to Manchester, England, and from there traveled by train to accommodations in Liverpool. For the first seven days of the program, the group took a flying visit to London and the traveled around the central England area. In this region of the British Isles, the students studied subjects like urban renewal, the geography of music (the Beatles, in particular), and the global economy. Students also experienced the natural beauty of popular spots like the Lake District, Scafell Summit (one of the three highest peaks in the British Isles) and the Yorkshire Dales, where they studied subjects like glaciation, biogeography, and tire repair strategies!

After leaving England, the group spent six days in Aberystwyth, Wales, staying in dorm rooms at the University of Wales, which is situated on a hill overlooking Cardigan Bay. They were able to visit Snowdonia National Park (centered around Snowdon, one of the three highest peaks in the British Isles and the highest in Wales), the town with the second longest name in the world (at least according to sources) (Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch (Thailand has the longest)), and the first iron bridge, among other places. In this region, students studied Welsh nationalism, transportation issues, the industrial revolution, weather and climate patterns, and national park management.

The group poses near St. Paul's in London

Students ascending Snowdonia in Wales

The group then spent six days in Scotland, in the village of Corpach in the highlands, just a few miles from Ft. William. A few students were able to climb Ben Nevis (the highest peak in the British Isles). In this region, students were able to visit Fort William, Oban, the Isle of Skye, and Loch Ness. Students studied oceanic and atmospheric circulation, deforestation, Scottish nationalism, and how individual industries (like whisky distilleries) affect the local economy.

Next, the group took a ferry across the Irish Sea from Troon to Belfast in Northern Ireland, where they studied Irish nationalism and politics. The next six days were spent in the Republic of Ireland. The group stayed in Limerick and visited the Dingle Peninsula, Cork, Cobh (last stop of the Titanic), Galway, and the Connemara Peninsula. In this region, students studied themes like immigration, the impact of the European Union, the geography of tourism, weathering and erosion, and fluvial geomorphology. The group returned to Nashville on June 28th, with everyone involved having had a wonderful time. This study abroad experience exposed students to global issues in a way that is impossible to duplicate in the classroom. Stay tuned for information about next year's study abroad experience in northern Argentina and Chile. Alumni are invited to participate in the Department's study abroad programs. Just contact the office (270-745-4555) for more information or visit the Department's website!

Surveying the Roman Wall in Chester, England

Tokelau

by Richard Deal

This summer, I had the opportunity to visit Tokelau, one of the smallest and most isolated countries in the world. It is situated about 300 miles north of Samoa and 500 miles east of Tuvalu in the southern Pacific. It has an area of five square miles and a population of 1500 on three separate islands, Atafu, Nukunonu and Fakaofo, each with about 500 people and each about 50 miles from its neighbor. Tokelau is the only remaining colony of New Zealand, which has administered it since 1926.

Unloading copra on Nukunonu

Tokelau is one of the most isolated places on earth. It has no airport and all travel to the island is by boat from Samoa, which takes almost 2 days. The boat used to visit only a few times a year but, since the 1980s, the service has been greatly improved and the boat now visits twice a month. The service is still somewhat irregular, as medical emergencies and other needs can cause the schedule to be changed at short notice. Everything that enters Tokelau goes on the boat. On the trip I took, cargo included a new motor boat for one island and an entire room full of toilet paper. It was also the quarterly fuel run and all the fuel that the country would get for three months was stored in hundreds of barrels on deck. The other main

Fakaofo Island

Tokelauan culture is one of the most traditional in Polynesia. The isolation means there are few outside influences, as Tokelau only gets 20 tourists a year. There is one long-term foreign resident, the Catholic priest, along with several teachers and a doctor who stay for a year or two. There is no television station and international phone calls have only been possible since 1997. One of the strongest elements of traditional culture is the inati, or sharing system. In this system all village adults work and the products are shared. For example, on days the men go fishing, the catch is distributed by the elders to all village households based on the number of people in the house and the resources of the family. All adults are expected to work several days a week on communal projects. While these traditionally were mainly food gathering, today they also include repairing the church, school, or hospital.

This system is under stress. One of the major problems is paid employment, all of which is in government jobs. Paid employment, which grew from almost no one in the 1960s to one-third of the population in the 1980s, has resulted in great inequities. Those people with government jobs still received their share from the inati, but did not help produce the food, and they could also buy imported food from their wages. This has been addressed by making all traditional communal work paid employment. Now all people have some cash to buy imported goods and to get a share of locally produced food, so equality is maintained.

Another problem is the decline in authority of the elders. Traditionally, all decisions were made by the

old men in the village. The growth of the civil service has eroded this authority without replacing it with a new source of legitimacy. This problem is still being addressed. The national government devolved many functions to the islands and their elders on July 1st, 2004.

The boat I took was full of civil servants planning for this major change. While devolution is commonly associated with far larger countries, it is hoped by the Tokelauans that it will help preserve their culture yet still allow for the provision of services, such as health, education, and communications that are needed in today's world.

Tokelau still faces many difficulties. There are still great problems associated with the remoteness of the islands. The efforts to preserve the traditional culture will become more difficult as modern conveniences continue to be introduced. The United Nations and New Zealand would like to see Tokelau decolonized, while Tokelau does not want to lose the aid and security that New Zealand provides. Finally, there is concern that sea-level rise will flood the islands in coming decades. Its efforts to address these problems will probably be as interesting and unusual as the way it has handled problems in the past.

A typical house on Nukunonu, with water tank on the first floor and living space on the second

Environmental Geology of Central California

by Andrew Wulff

Drs Wulff and Groves co-led a challenging and fun departmental fieldtrip centered on a traverse across central California during the Fall 2003 semester. Each student picked a specific topic to become the "expert" on, gave a presentation to the entire group, and led the discussions in the field. After flying into Ontario airport, the group ate at In-And-Out Burger (for most their 1st time) and proceeded across Cajon Pass. Smoke billows and a phalanx of choppers in the sky pointed out the beginnings of a wildfire, one of the first in a disastrous fall season in southern California. The group traveled past the great solar collector in the western Mojave and proceeded to the Coso geothermal field to observe an active volcanic field, boiling mud volcanoes, and one of the largest geothermal energy plants in the world. From there, the group proceeded to Sequoia-Kings Canyon National Park and joined a very large group of western geologists gathered for a FOP (Friends of the Pleistocene) trip that included the Quaternary features, caves, rocks, and everything else in the park.

From there, the group hurried across the Central Valley to the central coast, where students looked at the beautifully exposed rocks of the coastal ophiolite suits (stacks of pillow basalts, ultramafic rocks, blueschists, rodingite dikes, and folded pelagic sediments). A trip across Tehachapi Pass gave the group a chance to examine and discuss wind power and the California Aquaduct system, and collect ulexite, colemanite, and other cool minerals at a rockin' rock shop by Boron. The trip back across Cajon Pass provided an opportunity to look at the San Andreas Fault and rocks of the San Gabriel Mountains. A lot to pack into a fall break!!

Each student contributed pictures, notes, a roadlog, and background to a field guide, which was put together under the leadership and guidance of the great group of graduate students on the trip. The guidebook is available through the Department. An amazing T-shirt and large format poster on the wall in EST on the 3rd floor are very tangible products of the trip. Details and photos from the trip can also be found online at http://geoggeol.wku.edu/california/index.html.

Dr Wulff hopes that this sort of opportunity will become a hallmark of the Department – whereby graduate and undergraduate students will have the opportunity to travel and examine in some detail areas of interest. The students were able to take charge of much of the trip and the experience and results were fantastic!! If any alumni have ideas for future trips – please let the Department know!

Pillow Basalt

The California Field Trip Group

Geology of the Bahamas Spring Break 2004!!

By Fred Siewers

One of the big trips over this past year was the Department's first-ever offering of a field course on San Salvador Island, Bahamas. The course, "Geology of the Bahamas" (Geol. 476/476G), was taught during Spring Break (March 19-27) and was led by Dr Fred Siewers with assistance from Drs Mike May and Ouida Meier (Biology). Twenty-two students took the course, representing the range of the Department's degree programs in geology, geography, and geoscience. Included in that mix were six introductory-level students who, because of their interest in geology (and, yes, sunny tropical destinations!), decided to make the trip. The purpose of the course was to introduce students to the limestone geology and karst of San Salvador Island in order to advance their understanding of the Paleozoic geology of south-central Kentucky and the large-scale processes of global environmental change. Students learned about modern carbonate depositional environments and processes through field trips and small-scale research projects. Topics covered included carbonate sediment production, sedimentary structures, carbonate diagenesis, Quaternary sea level history, paleocurrent analysis, tidal processes, paleosols, island hydrogeology, cave and karst development, and coral reef formation. Students were required to write a research paper prior to taking the trip and to submit a final paper, project, or web site after returning from San Salvador. Details about the trip can be found at the course web site, which was entirely constructed by the students (see http://geoggeol.wku/bahamas).

The Bahamas Group in its Element!

The Geology of the Bahamas course is part of a new initiative by the Department of Geography and

Geology to engage students in the learning process and to recruit new students into the Department's degree programs. Although the Department has, for a long time, routinely offered field work and active-learning experiences within its courses, the Geology of the Bahamas is an intentional effort by the geology program to enhance the Department's field offerings, particularly at the introductory level where an engaging field experience can really attract students to the major. Plans are currently underway to establish an annual or biannual presence on San Salvador Island through field courses and student-centered research projects. Support for the Department's efforts on San Salvador, including considerable cost savings for students, came from a variety of University sources and applied research programs, including the Kentucky Council on Postsecondary Education (CPE) Action Agenda Fund, the WKU Foundation, the WKU Office of Sponsored Programs, the WKU Climate Center, the Hoffman Environmental Research Institute, and the Department of Geography and Geology. Look for another geology field course on San Salvador to be offered during the 2005-2006 academic year.

Grotto Beach, San Salvador Island

New Geology Curriculum

by
Ken Kuehn
University Distinguished Professor

The Geology degree program is emerging from a two-year review with a new look. Here are the details:

The current Geology degree program was implemented in 1992 and was designed with four distinct options: Fossil Fuels, Environmental, Hydrology, and Traditional. Each option diverged from a common core curriculum of 28 hours and each was technical in nature. The degree program was intended primarily to prepare students for professional practice or to gain entry into competitive graduate schools.

Since 1992, several significant developments, affecting either the program itself or the geology profession overall, have necessitated a substantial curriculum reorganization. First, Kentucky, along with 30 other states, now requires its professional geologists to become registered in order to practice. The criteria for achieving professional registration include passing the standardized, 8-hour ASBOG exam, which covers specified content areas. The emphasis that each content area receives in that exam is based on a detailed, "time on task" survey completed by thousands of practicing geologists across the nation. Second, Kentucky's certification process for high-school science teachers has been returned to the specific science disciplines. Previously, only a "life sciences" or "physical sciences" certification had been available. The discipline-based certification that includes geology is called "Earth and Space Science" and requires a broad, flexible program for Kentucky's pre-service teachers. Third, the Kentucky Council on Postsecondary Education (CPE) established an annual graduation benchmark that defines "productive" baccalaureate programs in the Commonwealth. This requires the program to appeal to a broader clientele in order to graduate twelve geologists every year. At present, none of the six geology programs in Kentucky meets

this goal but this Department ranks a very close second to the University of Kentucky in graduation rate. Fourth, the Department has been fortunate in attracting Dr Andrew Wulff, a very experienced hard-rock geologist, to a tenure-track position last year. He has contributed many valuable fresh ideas and perspectives to the curriculum revision process. Finally, the Geology program wanted to increase its cross-discipline synergies by including more skills and techniques courses from other subject areas, especially geography.

Clearly, the existing Geology program was no longer sufficient because the profession had moved toward more rigorous requirements, while the Department also needed to create more generally appealing and flexible options. Thus, the Geology faculty began a detailed review of benchmark geology programs across the region including their staffing, number of majors, and curriculum. Geology faculty also visited nearby competitors such as the University of Kentucky, University of Southern Indiana, and Vanderbilt University. Two years ago, the program adopted a standardized geology ACAT exam as an exit assessment to be taken by every graduating senior. It evaluates achievement in nine geology content areas. And last October, Dr. May and I sat for the ASBOG registration exam in order to assess the alignment of the program's curriculum content with professional expectations. To summarize, we found that the geology program's technical content and other cognate requirements for the major aligned well with comparable universities. The Department has an above average number of majors in the program, but it is below benchmark average in faculty to staff the geology program. The program's graduating seniors ranked above the national average on the ACAT assessment in both years, and Dr. May and I passed the ASBOG registration examination!

The final result of detailed curriculum deliberations has been a retooling of the four program options. They are now named *Earth and Space (Teacher), General Geoscience, Professional,* and *Extended Professional*. All still spring from a common core curriculum (now 20 hours), but their total program hours and related requirements vary considerably. Two new courses are added to the common core: *Introductory Field Techniques* and a new course, *Professional Preparation in Geology*. The latter is a capstone course that includes senior assessment and the college-to-career transition in its content. Two of the new options, *Earth and Space* and *General Geoscience,* are broader based and will lead to a B.A. degree in Geology. Both the University of Kentucky and Eastern Kentucky University already offer a B.A. degree in their programs. The program's new *Professional* and *Extended Professional* options are technical and will result in the B.S. degree in Geology. Students in these options will complete math through calculus and must complete either the Department's 12-hour GIS certificate or a summer geology field camp. The *Professional* option requires a minor program, while the *Professional Extended* option will allow students to take additional geology courses in place of the minor. Any other courses that may be specified within an option are intended to increase flexibility and opportunity for the students involved. With these changes, the Department is confident of attracting more geology majors, better engaging them with their studies, and bringing them successfully to graduation. The Geology faculty and students are fully committed to helping the university achieve the goal of its vision statement: "Western Kentucky University aspires to be the best comprehensive public institution in Kentucky and among the best in the nation." If you would like to know more about the new geology degree program and its various options, please contact me at kenneth.kuehn@wku.edu or (270) 745-3082.

Dr. Ezzat Raeisi

The Center for Cave and Karst Studies was pleased to welcome Dr Ezzat Raeisi, a geology professor from Shiraz University, Shiraz, Iran, in a post-doctorate position for the 2003-2004 academic year. Dr Raeisi received his Ph.D. in Engineering Hydrology from Colorado State University, Ft. Collins, Colorado, in 1982. While at Shiraz University, Dr Raeisi founded M.Sc. and Ph.D. programs in karst hydrogeology and performed many research projects. During 1995-96, he was a visiting associate professor within the Geology Department, Mississippi State University, and worked with Dr John Mylroie.

Dr Raeisi's interest in karst hydrogeology led to his current research here on the karst hydrogeology of

Mammoth Cave National Park. While working at the CCKS, much of Dr Raeisi's research was in cooperation with Dr Chris Groves, Hoffman Environmental Institute, and Joe Meiman, hydrologist at Mammoth Cave National Park. To facilitate his research, the CCKS funded and built a weir at Mammoth Cave to measure discharge and other geochemical variables of water flowing off the sandstone caprock and sinking into the underlying limestone and then flowing through Logsden's River through Mammoth Cave National Park to Turnhole Spring on the Green River. The weir was constructed at a cost of $20,000. The funds were donated by the CCKS to facilitate future research performed by Ezzat Raeisi, Chris Groves, Joe Meiman and other karst scientists and graduate/ undergraduate researchers associated with the newly formed Mammoth Cave International Center for Science and Learning.

Dr Raeisi has returned to Iran, and the CCKS will continue this research in his absence. The Center is working on a cooperative arrangement with Shiraz University to permit Ezzat to return to the U.S. for two months each summer as an adjunct professor in the Department. The CCKS is very pleased that Dr Raeisi chose this Department for his post-doctoral research (particularly since we do not even offer a doctorate) and everyone hopes that he will continue to be an important asset to the CCKS, the Hoffman Institute, Mammoth Cave National Park, and the faculty and students of the Department.

Dr Raeisi's wife, Soosan, and their son, Pooyan, traveled with Ezzat to Bowling Green for the year. Soosan, who studied at Colorado State University for her degree in early childhood education, was happy to have an opportunity to brush up on the latest American advances in her discipline by using contacts at WKU and by working each week with the children at Natcher Elementary school. Pooyan attended eighth grade there and became fluent in English on his first visit to America.

Dr Raeisi was a valuable asset and a good friend during his visit, and the CCKS is pleased that he will continue to be a contributing member of the CCKS and the Department of Geography and Geology in future years.

Activities of The Center For Cave And Karst Studies

Research*:* The Center had another successful year, increasing its grants and contracts for karst investigations. Faculty involved in the Center's work included Drs Nick Crawford, John All, Stacy Wilson and Ezzat Raeisi. Full-time professional staff included Annie Croft, Research Hydrologist and Education Coordinator, and Scott Roach, Laboratory Manager of the Dye Tracer Laboratory. The office administrator for the CCKS is Lisa Haynes. Graduate students funded by the CCKS were A.J. Iovani, Ben Tobin, Yancy Moore, Sarah All, Jenna Harbrough, Brian Sakofsky and Pat Kambesis. Undergraduate associates included Ronson Elrod, Mike Firkins, Brian Ham, Josh Brewer, Laura Kreitzer, Chad Martin, Rolland Moore, Jeremy Tallent, Andy Zimmerman, Stephen Miller, Thomas Rippy, Daniel (Rusty) Bell, Daniel Thomas, Ashley Williams, and Kassie Decker. These students worked on numerous grants and contracts, obtaining career-building experience in problem solving. The Center is very proud of two of its undergraduate research associates who graduated this spring, geography majors Andy Zimmerman and Brian Ham. Not only did they graduate with high GPAs, but they were each co-authors on over twenty-five professional reports, publications. and papers presented at professional meetings. They both obtained employment with environmental consulting firms in their own home town within weeks of graduating. A major goal of the Applied Research and Technology Program of Distinction is to get undergraduate students involved in the world of applied research. This not only assists private firms and government agencies, but also greatly adds to the students' educational experience. Most of the research performed involved karst subsurface investigations, primarily microgravity, electrical resistivity, cave exploration and mapping, and dye tracer investigations to determine groundwater flow directions to assist with karst groundwater contamination problems and to delineate water supply source areas.

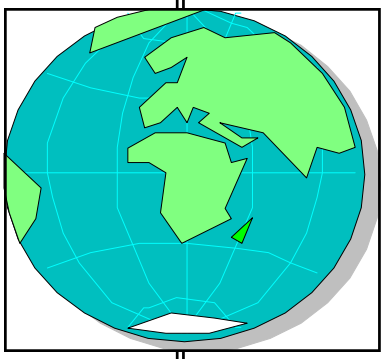
More news about the CCKS is available online at

http://www.wku.edu/geoweb/info/geogram04-2.htm

FACULTY ACTIVITIES

KATIE ALGEO taught introductory classes in human geography and Geographic Information Systems during the 2003-2004 academic year. She also taught an upper division cultural geography course, using a variety of media and methods, including film, photography, travelers' accounts, and the mall retail environment, to probe cultural identities and landscapes.

Katie has been researching the historical geography of tourism to Mammoth Cave, and is pleased with the positive response garnered by her article "Mammoth Cave and the Making of Place," published in the Spring 2004 issue of *Southeastern Geographer*. A copy may be seen on-line at her web page: http://www.wku.edu/~katie.algeo/home/Katie_Algeo.htm. This summer she spent a month doing archival research in the Huntington Library of San Marino, California, which owns a large volume of materials related to Mammoth Cave, dating to the early nineteenth century.



Katie continues to maintain the web site for the Rural Geography Specialty Group of the Association of American Geographers (http://www.wku.edu/~katie.algeo/rgsg/rgsg.htm) and invites everyone to take a look at it as sessions form for the annual meeting. Community service activities found Katie helping the Allen County Historical Society preserve court house records from the early twentieth century.

JOHN ALL writes that his second year in the Department has been even more pleasant and productive than the first one. In addition to his major teaching focus in the Environmental Planning and Management track, John was able to teach Satellite Remote Sensing this past year. This new offering brought students from across the University, in addition to Geography and Geology students, and was well received. Dr All was able to lead numerous supervised student internships – topics included a spatial analysis of toxic waste sources in Warren County, Central Kentucky Cave Survey techniques, stormwater management in karst regions, and the monitoring of water quality in caves. Ten students presented the research from these projects at the Sigma Xi Student Research Conference at Western in April 2004. Dr All also helped his first two Master's students complete their requirements for graduation as well. Jenna Medlin's research concerned conversion of wetlands into residential communities near Charleston, SC, and AJ Iovanna worked with residential radon vulnerability in Warren County, KY.

Dr. All was able to complete several funding proposals to the Kentucky Academy of Science, the National Science Foundation, and the Kentucky Heritage Land Conservation Fund, among others. The Kentucky Heritage Land Conservation fund award will especially benefit the Department as it will be used to purchase a 120-acre field research station adjacent to Mammoth Cave National Park. Working with Dr Chris Groves and Pat Kambesis, Dr All has secured the funding and now must negotiate the deal with the landowner. This project will provide protection to the last private, unmonitored entrance to Mammoth Cave. Locally, John has been very involved with the City and County as they struggle to meet Clean Water Act requirements for stormwater pollution. His law degree is proving invaluable for addressing CWA regulations. Dr All is also working on other projects such as the NSF-funded Summer Research Experience for Undergraduates in the Mammoth Cave/Upper Green River Watershed and the Technical Assistance Center for Water Quality, which is funded by the EPA. Finally, John is leading efforts to create a Geohazards Research Center using funding from the National Science Foundation. This new Center would tie together many research efforts already underway within the Department and create new opportunities and resources for collaboration.

At the 100th Centennial meeting of the Association of American Geographers in Philadelphia this year, Dr All's work was included in a publication celebrating geographic research called *World Minds: 100 Solutions to Geographical Problems*. His chapter is entitled "The Colorado River Delta of Mexico: 'Endangered' Species Refuge." This book was given to all participants and is now for sale from the AAG.

In addition to the AAG meeting, Dr All and his students presented research results at the Kentucky Academy of Science, the Sigma Xi Research Conference, and the 16th National Cave and Karst Management Symposium. Dr All also lead groups of students to local high schools where they presented research on issues of local concern like water quality and sinkhole collapse. The purpose of these trips is to give Western students experience with public speaking in a low-stress environment while exciting the high-school students about what can be done with Geography and Geology, especially at Western. Dr All also attended a two-week course to learn the latest functionality in satellite remote-sensing software. This course convened in Washington D.C. and was too close to Christmas for comfort!

Dr All helped host the Kentucky Academy of Science annual meeting and was elected Chair of the Geography Section. In the University Senate, he was re-elected to the Faculty Welfare and Professional Development Committee and has been pushing for better salaries, better health benefits, more realistic teaching loads, and better parking. John has also been working on the Ogden Space Allocation Committee to ensure that the Department doesn't lose any space as the University grows, and he has worked to try and increase the lab space available to the Department as it continues to grow rapidly. He is also working on a University-wide committee to try and develop an Environmental Science program that potentially will include a PhD degree.

Finally, John's personal life has grown far more interesting and wonderful with the birth of his first child, Nathaniel Oakes All. John loves fatherhood and looks forward to a full nights sleep…sometime in about eighteen years. Sara and John have purchased land in Richardsville that he uses for student Natural Resource Management and Environmental Planning fieldtrips and where they plan to build a home in a few years. John and Sara's roots are growing deeper in the community day by day and they look forward to many productive years at Western.

JAMES BINGHAM writes THIRTY-NINE GOING FOR FORTY—REFLECTIONS AND RECOLLECTIONS FROM THE HILLTOP.

It really is true in many instances that the more things change, the more they stay the same. The major problem in 1965 when Jim came to WKU to start his teaching career was PARKING and it is still the major problem today. Contrary to what some may say, WKU basketball is nowhere close to as exciting and competitive at the current time as it was in the 60s and 70s. Haskins, the Smith brothers, Mac, Glover, Rose, and Perry, to mention a few, have not been matched in recent years.

Have you heard the HILLTOPPERS recently? Songs that have lyrics that mean something. A CD should be available soon if you liked their music.

R. PAUL TERRELL, Department Head when Jim came to WKU, and a person that he's sure many alumni from the 60s will remember, passed away in January 2004. No, he did not walk that way because his toes were frozen off during the Korean War.

Jim must be aging because he notices that some distractions in the classroom are starting to bother him now--DAMN CELL PHONES.

DIM LIGHTS HIDE THE MILEAGE
CLAIROL HIDES THE GRAY
AND HE WON'T MENTION ANYTHING
TO GIVE HIS OLD AGE AWAY
Foster/Rice

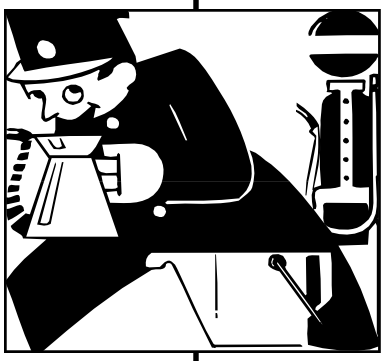
Jim's teaching continues to involve Economic Geography, Urban Geography, Geography of North America, Resource Management, Geography of Kentucky, and Planning. Recently, he has taught both on campus and at WKU's Owensboro Center. Currently, Jim has several research projects underway including some that are short-term and some that are long-term. Among the projects are:

1. Food Deserts: Do They Exist in Kentucky?
2. The Diffusion of Wal-Mart Supercenters in Kentucky.
3. The Impact of Wal-Mart on the Retail Structure of Small-Town Kentucky.

4. Free Blacks and Agricultural Communities in Western Tennessee Prior to the Civil War.
5. The Role of River Landings in the Early Economic Development of the Lower Tennessee River Valley.
6. Field Peas and Cornbread: A Spatial Analysis of Southern Comfort Food.
7. Fried Pies and Cobblers: Regional Variations in the South.
8. Grits: Regional Variations in the South and Midwest.

Jim plans to teach a while longer if his health holds up. It appears that his congestive heart condition is no worse but he does notice that he does not get around like he once did. Jim has always heard that one will know when it is time to retire--he has not reached that point. In fact, Jim feels like his mission has not yet been accomplished.

DR. "TINK", KEEP ON ROLLING WITH THE FLOW !
PLEASE COME TO SEE US FOR HOMECOMING AND STAY TUNED FOR NEXT YEAR'S REPORT.



WILL BLACKBURN has completed his first year as a full-time instructor. Will's main responsibility is to cover the geography classes offered at the Glasgow campus. These classes currently include Kentucky Geography, World Regional Geography, and North American Geography. In the future, he hopes to include Introductory Meteorology, Physical, and Human Geography as the need arises.

Will schedules his classes for Tuesdays, Wednesdays, and Thursdays and maintains an office at the Glasgow facility for his and student convenience. He additionally keeps an office in EST to continue his work at the Bowling Green campus on Mondays and Fridays. This gives him the opportunity to maintain close ties with the Department to keep in touch with departmental and university issues and changes.

This past year he presented research at the Kentucky Academy of Sciences and presented a poster, along with Debbie Kreitzer, at the annual AAG meeting in Philadelphia. In the summer, he participated in the British Isles study-abroad program that took students into the field to study both cultural and physical landscapes. He claims to have learned as much as the students.

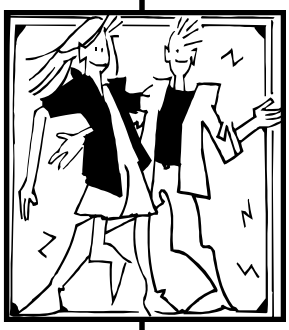
His family, wife Stephanie and daughter Abby, gets as much of his spare time as possible. He constantly has to explain to daughter Abby that taking horseback riding lessons does not mandate horse ownership. He continues to care for Black Walnut tree groves, works on the restoration of an antique jeep, takes advantage of the Barren River Reservoir, and occasionally beats the dust off the guitar strings.

KEVIN CARY completed his second year as a faculty member in the Department of Geography & Geology. He serves as the GIS Facilities Manager for the Department, while supervising students on GIS projects and GIS internships in the state-of-the-art GIS Facility. During the recent academic year, he taught World Regional Geography, GIS Analysis & Modeling, GIS Application Development, and Internet GIS. The GIS Facility is the center for GIS at WKU. It is currently engaged in projects with Facilities Management and Network Services. Those projects include parking lots, tree inventory, underground conduits and telephone wires. The next project is to establish an Internet mapping service for the campus community by utilizing ArcIMS®.

During the 2003-2004 academic year, Kevin presented research at Kentucky's 2003 GIS Conference, 2nd Annual Middle Tennessee Forum on GIS, and at WKU's GIS Day. Over the summer, Kevin had the opportunity to participate in a panel discussion led by Lynne O'Connor (Governor's Office for Technology) on ESRI's University Site License at the ESRI Conference in San Diego, California.

GLEN CONNER had another active year of retirement. The abstract of his paper "Kentucky's Climate During the Civil War" was published in the

Journal of the Kentucky Academy of Science in Fall 2003. He presented that paper to the Allen County Historical Society in October. His article titled "Why not Observer History?" appeared in the premier edition of *The Climate Station Chronicles*, published by the Midwestern Climate Center in Fall 2003. In November, he presented a paper titled "What Smithsonian Records Can Tell Us" at the annual meeting of the Kentucky Academy of Science held in Bowling Green. In January 2004, he presented "Nineteenth Century Weather Observers: A Whodunit" to the American Meteorological Society's Applied Climatology Conference in Seattle. The article was published in the Combined Preprints of that conference's papers. In March, he presented a paper titled "Weather During Kentucky Civil War Battles" at the annual meeting of the Association of American Geographers in Philadelphia. He was the Chair of a session on Climate and Agriculture as part of the same meeting. His article on "The Observer as a Scientist" appeared in *The Climate Station Chronicles*, published by the Midwestern Climate Center, in May 2004. Glen is now working on developing climate station metadata under a contract with the University of Illinois.



He attended the American Association of State Climatologists annual meeting held in Portland, Oregon, in August 2003. Glen visited the National Climatic Data Center in Asheville, NC, in October 2003 to continue research in its library and archives for metadata for 19th c. Kentucky climate stations. He attended the Extreme and Hazardous Weather Conference sponsored by the American Meteorological Society convened in Champaign, Illinois, in October. Glen continued research on Dr Samuel D. Martin, a Smithsonian Meteorological Observer in Kentucky from 1865-1875.

He taught Aviation Meteorology during the Fall 2003 Semester, as he has each Fall since his official retirement in 2000.

NICK CRAWFORD taught two sections of Introduction to the Physical Environment and the Geoscience Field Methods class in Fall 2003. One of the highlights of the Field Methods class was a GPS exercise on Percy Priest Lake provided by the USGS. This allowed the class to use GPS to map a hypothetical wildlife preserve and also to map the lake bottom using USGS recording sonar instrumentation. Each student, with the assistance of Kevin Cary, prepared a GIS map of the proposed wildlife area. Water samples were collected and analyzed in the USGS laboratory.

During the Spring 2004 semester, Nick taught two sections of Introduction to the Physical Environment and the 440 Hydrogeology course. A highlight of this course was a field trip led by Nick to Middle Tennessee. One day involved going upstream by canoe in Snail Shell Cave in Middle Tennessee, and then exploring Lost Creek Cave where they observed a large underground waterfall about one-half mile back in the cave. The trip also included Grassy Cove, probably the largest sinkhole in eastern North America and the source of the water that supplies Sequatchie Spring at the headwater of the Sequatchie River, which flows through a classic example of an anticlinal valley.

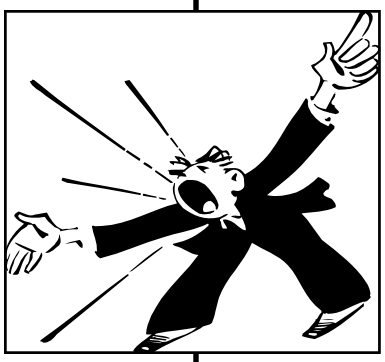
In addition, Nick was heavily involved in research. In September, he presented two papers at the 9th International Sinkhole Conference in Huntsville, Alabama. Both papers were refereed and published in *Sinkholes and the Engineering and Environmental Impacts of Karst,* Geotechnical Publication No. 122, American Society of Civil Engineers. Nick also published an invited article on water-tracing history in the *Encyclopedia of Caves and Karst*.

Nick also wrote numerous grant proposals and obtained grants and contracts for the Center for Cave and Karst Studies for karst investigations. Annie Croft and Scott Roach were project managers for most of these. The scientific research performed for these projects led to over 40 professional reports co-authored by Nick, Annie Croft, Scott Roach, and graduate and undergraduate students. The largest grant received by Nick was for $225,000 over three years from the Kentucky Science and Technology Corporation to develop robotic instrumentation for obtaining karst

subsurface microgravity and resistivity data. Dr. Stacy Wilson, Electrical Engineer, and two of her students are heading up the robotics grant.

MARGARET CROWDER writes that it has been an amazing first year as a full-time member of the faculty here at Western. She knew as a student here that she loved the Hill, and this past year has only reinforced her belief that Western offers a truly unique and wonderful experience for everyone who is fortunate enough to be a part of its extended family.

Within the Department, Margaret spent this past year teaching primarily Introduction to Geology sections and Physical Geology Labs. She also was able to assist Dr Siewers in teaching an on-line course in Earth System Science for Educators during the spring semester. She says it was hectic, but also very rewarding.



In other university-related activities, Margaret helped judge the Southern Kentucky Regional Science Fair for middle and high-school students, and lead a Super Saturdays course offering through the Center for Gifted Studies. The course was called "Hollywood Geology," and she guided twelve fourth and fifth grade students from the region through the process of creating their very own movie with geological events as the central theme. A great time was had by all, and the students left the class not only with a better knowledge of geology, but also with their very own copy of their movie!

Margaret also participated in the Faculty Center for Excellence in Teaching (FaCET) cover design contest and received a third-place finish for her original design. Outside of the university, Margaret has continued her foster work with the BG/Warren County Humane Society, and has become a bit of a political activist by volunteering her time with a local grassroots organization. In her spare time this summer, Margaret traveled to Montreal to take in four Mets/Expos games and she would like to report that she did indeed receive Mike Piazza's autograph!

RICHARD DEAL has completed his third year at Western Kentucky University. This past year he taught several sections of Human Geography and Data Analysis and Interpretation. He also taught Introduction to Geographic Information Systems for the first time.

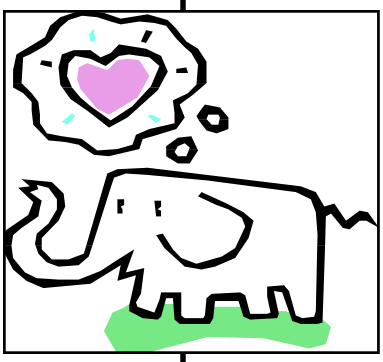
While his research on local and regional government continues, he has developed an interest in the Pacific. Richard presented two papers based on last year's field work: "The Political Impacts of Depopulation in Niue" at the Association of American Geographers Annual Meeting in Philadelphia and "The 'Pacific Solution' on Nauru" at the Political Geography Specialty Group Conference in Atlantic City.

He continued to write questions for the World Geography Bowl, a geography trivia contest for students held at the Southeastern Division of the Association of American Geographers Meeting each fall. He also served as a moderator for the event. Dr Deal has been elected to office in several professional groups, most recently as Vice President of the Southern Kentucky GIS Users Group, an organization of local people, mainly in local government and at Western, who use GIS.

This past year Richard went on two separate trips. The first was to China, as part of the Western China Faculty Development Seminar. This was delayed from last year due to the 2003 SARS outbreak. The trip consisted of six people from WKU. Together, they experienced the culture, history, and geography of China in a number of spots, including Beijing, the Great Wall, Xian, Chongqing, and the Three Gorges. While one purpose of the trip is to introduce Western faculty to China, the other purpose is a faculty exchange with the Chongqing Business and Technical University. Several days were spent at the university meeting faculty and administrators. Dr. Deal gave a talk entitled "Regional Differences in American Local Government" to a group of students. As an aside, Chongqing is the world's largest city by some measures, with over 30 million people. In 1997, a 32,000 square-mile region was declared the

Municipality of Chongqing, which is how the city can make the claim, despite the vast majority of the population living in rural areas.

The second trip was to the South Pacific. Dr Deal visited two countries for the first time – Tokelau and Tuvalu. Tokelau has a population of 1500 and is currently a territory of New Zealand. It has no airport and is a 2-day boat ride from Samoa. He was the only tourist in the country at the time, although there were several visiting New Zealand civil servants helping to prepare for the devolution that occurred on July 1. It proved to be a very good time for a political geographer to visit. Tuvalu is a relative giant, with 10,000 people. Recently, Tuvalu has attracted much attention due to the fact that the islands are disappearing, possibly due to sea-level rise from global warming. The main event while he was there was the opening of the new government office building, the only three-story building in the country. The Tuvaluans held a gigantic traditional feast, which was accompanied by several traditional dance troupes, so it was a fascinating cultural experience. After visiting Tokelau a mere year after stating in the Geogram he would eventually like to go, he has now put Pitcairn at the top of his list of small, isolated islands to visit. As Pitcairn is even harder to get to than Tokelau, this may not happen for several years.



SCOTT DOBLER is always trying to help in anyway he can. During his first semester at Western, the academy tried to its best to slow down his enthusiasm. The first attempt was to assign him to a large task of unfathomable proportion: clean up the map room, and categorize each map based on age, type, theme, and use for the Department. For those of you who have entered the map library in the past, you can easily take pity on his soul. For those of you who have never been in the map library, be advised that this was not a very nice thing to do to him.

Scott is interested in geographic education, geohazards, and outreach to the P(K)-12 schools. He is still taking classes with the hope of earning his doctorate before his retirement party scheduled for 2030. He is affiliated with the Kentucky Climate Center, and has been bringing a number of K-12 classes to the Department to study weather and graduate-student phenomena.

As mentioned above, Scott has been slowly restructuring the map library over the last four years. He has been responsible for re-cataloging all the maps and USGS 7.5 minute quadrangles (topographic maps). To make the challenge more interesting, the Department received a donation of 50,000 additional maps from the US Census Bureau. His colleagues believe Scott is in there somewhere, due to a large heap of material appearing by the map library trashcan each morning.

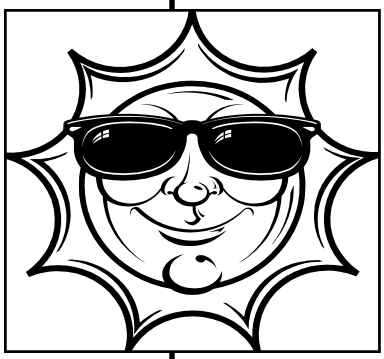
Scott has located a number of interesting items in the library that range from original national park wall maps to a mummified mouse found next to desiccated limburger cheese (hypothesis). Technology has changed and there are a number of wonderful wall maps that are no longer used in the classroom. These wall maps are still in wonderful shape, and the Department will be selling them shortly to interested buyers. If you would like to find out more information about this, please contact Scott by email (scott.dobler@wku.edu) or at 270-745-7078. The Department is charging a nominal fee to cover shipping and handling, and the rest of the profit will be donated to the geoscience clubs.

The Department is also going to have a number (at least 10,000 duplicates) of topographic maps cut up into stationary and envelopes to sell for the geoscience clubs. Faculty have not decided on the value of this wonderful opportunity, but a link will be placed on the Geography/Geology website that will inform you about pricing. If you would like to know more about this project, you can contact Scott - he reads his email daily but, if you call, we have to send three graduate students to "fish" him out of the library. (This is not that unusual, we need one to read a compass, one to operate the ropes, and one to administer the pry-bar.)

STUART FOSTER recently completed his 16th year at Western. He attended the annual meeting of the American Association of State Climatologists held during August, 2003, in Portland, Oregon. In November, he presented research on drought

assessment at the Kentucky Academy of Science meeting. Dr. Foster serves on the Mammoth Cave Biosphere Reserve Advisory Group and participated in a U.S. Man and the Biosphere Workshop held during May in St. Louis. He also represented the Kentucky Climate Center at a recent National Weather Service Central Region Sub-Regional Climate Services Meeting hosted at the University of Missouri.

CHRIS GROVES, along with his students and colleagues, continued to make progress on the Hoffman Environmental Research Institute's karst water resources research program in southwest China. The group made two trips to China this year, the first by Deana and Chris who traveled in December and January to their traditional base at the Karst Institute in Guilin, as well as to a new cave project area in far western Hunan Province. There, they met with Chinese scientists and government officials and visited several sections of a huge, remote cave system, with passages as wide as 300 feet in places, to negotiate details of an expedition to the area in April. Most of the area's caves are still unexplored because of deep pit entrances. The trip also had a second purpose in extending Chris and Deana's deepening personal relationship with China--after the cave expedition, and two previous years of paperwork, they traveled by train to Changsha in eastern Hunan to adopt their new one-year old baby daughter Lillian Jane Zhao Ying Groves, who is now happily adjusting to life around the Groves household back in Kentucky to the great joy of all involved!



In April, an eleven-member team, led by the Hoffman Institute's Pat Kambesis, returned to Hunan for a three-week expedition to explore and map caves. There, the team assisted the government with planning for an underground reservoir to make water more accessible to about 50,000 residents of villages on the plateau above the cave system, with additional benefits of flood control and power generation. This included the first American cave diving ever in China, which required exceedingly complex planning. An interesting twist was that the folks in the small village housing the expedition spoke the Miao language rather than Mandarin Chinese, and thus all communication went from English to Mandarin to Miao. This made more interesting the efforts of Geoscience graduate student Mark Graham, who conducted research surveys with the local population on perceptions of water availability and quality of life in the remote area.

The first peer-reviewed publications from the Chinese research, with Mammoth Cave Hydrologist Joe Meiman, were published this year with "Hydrochemical Variations During Flood Pulses in the Southwest China Peak Cluster Karst: Impacts of $CaCO_3$–H_2O–CO_2 Interactions" in *Hydrological Processes*, and "South China Karst Aquifer Storm-Scale Hydrochemistry" in *Ground Water*.

Other events during the year included an invitation by the National Forest Service to address about 40 Forest Service hydrologists and fisheries managers in Alaska's Tongass National Forest. The goal was to help the federal managers better understand karst hydrology in general, and how these concepts relate to protecting the ecology of Tongass, America's largest national forest at 17 million acres. A nice fringe benefit was that the trip coincided with recent intense solar storms that filled the Alaskan night sky with especially spectacular displays of the northern lights.

During the summer Chris was appointed as an Adjunct Assistant Professor of Sedimentary Geology at the University of Kentucky, which should lead to excellent geology research collaborations between WKU and UK, bringing together strengths of both Departments.

Unfortunately, for Chris at least, in August 2003 Deana finally graduated from the University of Hawaii with a Master's Degree in Library and Information Science, ending a string of four summers for them there at the University. She was subsequently hired into a faculty position as the cataloger for the WKU Educational Resources Library in the fall.

DAVID J. KEELING reports that his eleventh year in the Department, and third as Department Head, brought challenges, excitement, and great students, with several productive research trips, many

fun classes, informative conferences, and hard-working students to keep him hopping.

Travel continues to be an important part of Dr Keeling's professional and personal life, and over the course of the past year he enjoyed some fabulous research and lecture trips to the four corners of the planet. In August 2003, Dr Keeling drove 2,500 miles across the northeast, visiting Chicago, Cleveland, New York City, Washington DC, and Cincinnati, evaluating changes in the urban landscape. He's particularly interested in waterfront development projects. November found him winging across the Pacific for a week in Hawaii, testing the softness of the sand on Lanikai Beach and visiting Hawaii Volcanoes National Park. In December, Keeling spent 10 days in Manchester, England, evaluating waterfront redevelopment projects in Salford Quay and throughout the downtown area of the city.

In March 2004, Dr Keeling headed across the Atlantic once again, this time to Dakar, Senegal, in West Africa, for a series of lectures on an American Geographical Society educational tour. The 16-day journey visited Goree Island, the Cape Verdes, the Canaries, Agadir, Taroudant, and Casablanca in Morocco, Gibraltar, Arcos and Jérez de la Frontera in Spain, and Lisbon, Portugal. After the end of the Spring semester, David headed south to Guatemala for a week to attend the Conference of Latin Americanist Geographers meeting convened in Antigua. Finally, he crossed the Atlantic once again in June to help lead the Department's annual Study Abroad program, visiting Liverpool, Manchester, the Lake District, the Yorkshire Moors, Chester, Aberystwyth, rural Wales, Inverness, Skye, Oban, Ft. William, Belfast, Limerick, Dingle, and Galway. In between all of the international trips, Dr Keeling managed several flying visits to New York, New Orleans, Philadelphia, and Akron for a variety of meetings, conferences, lectures, and personal activities.

David participated in several conferences and workshops during the year. In March, 2004, he gave a paper titled *Qualitative Research Methods and the Puerto Madero Project, Buenos Aires, Argentina* at the annual conference of the Association of American Geographers convened in Philadelphia. In May, Dr Keeling presented *Pinochet's Folly: Development and Change in Patagonian Chile* at the Conference of Latin Americanist Geographers convened in Antigua, Guatemala.

Within the community and on campus, Dr. Keeling gave several talks on issues ranging from globalization in Latin America, biodiversity, and enlargement of the European Union, to U.S. foreign policy in Africa and the political-economic situation in Iraq. He appeared several times on WKYU-FM's Midday Edition, provided information about Africa on WBKO television, gave talks at the Rotary Club and Barnes and Noble, and contributed lectures to a number of departmental courses. Dr Keeling continues to serve as a National Councilor for the American Geographical Society, and as the webmaster for the Society (visit www.amergeog.org).

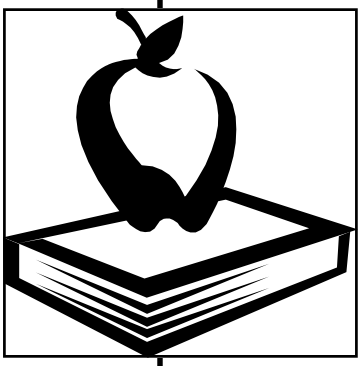
As Department Head, Dr. Keeling attended way too many meetings, but during the year he contributed to the ongoing development of the Leadership Studies Committee (www.wku.edu/leadership) and to the International Education Council (www.wku.edu/iec). Department Head duties have severely restricted his ability to write and publish research, but during the past year Dr. Keeling had a co-authored chapter titled "Latin American Geography," published in Gary L. Gaile and Cort J. Willmott (eds.), *Geography in America at the Dawn of the 21st Century,* Oxford: Oxford University Press. He also made some progress on his book *Geography Rocks!,* a geographical analysis of the development and change of popular music in American society, and wrote a commentary titled "The Challenges of Geographic Illiteracy" for *Ubique: Notes from the American Geographical Society*.

As always, Dr Keeling encourages past, present, and potential students to come by and share travel stories, information, and geographic tidbits. He can be reached easily in cyberspace at: david.keeling@wku.edu or by phone at (270) 745-4555. Also, visit Dr Keeling's homepage on the World Wide Web— just enter: http://www.wku.edu/~david.keeling/index.htm.

STEPHEN KENWORTHY had a busy first year

teaching, pursuing research, and getting to know the faculty, staff, and students in the Department (some of whom are still glad that they hired him last fall!). When he wasn't teaching or attending stimulating departmental meetings and social functions, Steve and his spouse Renae Speck spent time getting to know Bowling Green and Nashville better. One of the highlights was a canoe trip down the Green River in Mammoth Cave National Park with Steve's parents who, along with Renae, pledged never to let Steve plan a family outing ever again!

The Green River has become Steve's local research focus. In addition to becoming a part of the Upper Green River Watershed Watch (a regional volunteer environmental monitoring group), Steve is collaborating with faculty in the Center for Water Resource Studies and the Center for Biodiversity Studies at WKU on development and implementation of an environmental monitoring plan for the Upper Green River Basin. Steve also received funding from WKU and from the US Geological Survey to support preliminary field studies of sediment supply and storage in the Green R. These funds made it possible to set up the beginnings of a sediment laboratory and to support students working on the project. Over the summer, graduate student Scott Schoefernacker worked with Steve on the river collecting sediment samples and surveying deposits, and in the lab processing samples and analyzing data. Steve is looking forward to a lot more exciting work on the Green R. in the near future!



This summer Renae accepted a position as Proposal Development Coordinator in the Office of Sponsored Programs at WKU. Steve and Renae are very pleased about this opportunity and look forward to moving closer to Bowling Green someday soon. On the vacation front, in August Steve and Renae a enjoyed New England/New France getaway that included visits to Vermont's Northeast Kingdom, Quebec City, and the White Mountains of New Hampshire. They returned home safely to the relief of their beloved cats Nixon and Isabel. Both Steve and Renae are anticipating a challenging and fun fall semester at Western.

DEBRA KREITZER spent a very productive year teaching, researching, and planning new geographical experiences. Her greatest challenge has been revising the *Cartographic Design for GIS* course. This course is not only a requirement for all geography majors, but also for those seeking a GIS Certificate.

Debbie attended the Association of American Geographers (AAG) Annual Meeting in Philadelphia, PA, and presented a poster in conjunction with William Blackburn titled *High Ground-Level Ozone Concentrations at Mammoth Cave National Park*. The research presented is part of an ongoing effort to understand why Mammoth Cave National Park has such high ground-level ozone concentrations. Will and Debbie looked for correlations between Park visitation and ozone concentrations. Although some weak relationships were found, it is evident that more research needs to take place to solve this mystery.

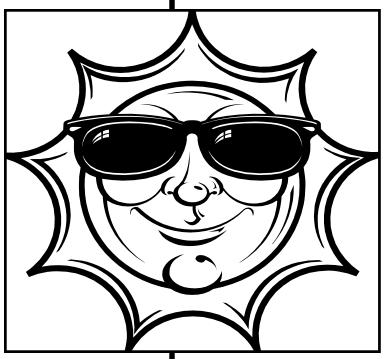
Along with David Keeling and Will Blackburn, Debbie coordinated a study abroad trip to the British Isles during the month of June. For almost a month, nine students were exposed to the many cultures and landscapes of this beautiful region. The group spent seven days in the Liverpool/Manchester area, six days in Wales, six days in Scotland, two days in Northern Ireland, and six days in the Republic of Ireland. Students were able to experience natural wonders like the Lake District and the Yorkshire Dales in England, Snowdonia National Park in Wales, the Isle of Skye in Scotland, and the Dingle Peninsula in Ireland. Currently Debbie is working on the 2005 study abroad trip to northern Argentina and Chile.

Debbie is still the advisor to the Geography Club. Her goal for the club this year is to triple the membership, include more students in departmental activities, build camaraderie between faculty members and students, provide public service opportunities, and provide geographical experiences through field trips.

KENNETH KUEHN writes Good Greetings Geo-alums! For Dr Kuehn, the past academic year was a very busy one in research, curriculum, and professional development activities. Ken and Dr May

co-authored two professional presentations. The first, *"Road Hazard Ahead: The Dishman Lane Karst Collapse, Bowling Green, Kentucky,"* was given at the Appalachian States Coalition for Geohazards in Transportation held in Lexington and the second, *"Earth System Science, Mammoth Cave National Park, and the Proposed Kentucky Trimodal Transpark,"* was presented in Seattle at the national meeting of the Geological Society of America. Dr Kuehn was also co-author on an invited paper, *"Petrographic Response to Oil Agglomeration of Coal,"* presented in an international forum in Utrecht, The Netherlands. This concerned some coal technology research he conducted together with colleagues at the University of Kentucky.

The big event last fall was Ken's organizing and co-leading the Kentucky Society of Professional Geologists annual field conference together with 1997 WKU Geology alumnus, Keith Milam. The conference focused on evidence that the three-mile-wide basin that holds the city of Middlesboro, Kentucky, was formed by an ancient meteorite impact. If you are not familiar with the fascinating geologic story of Middlesboro and Cumberland Gap, an excellent visual summary (including maps and waypoint data) of the field trip has been provided on-line by Brandon Nuttall of the Kentucky Geological Survey at http://www.kspg.org/MiddlesboroKSPG03/middlesboro03.htm. The field guide *"Geologic Impacts on the History and Development of Middlesboro, Kentucky"* (which includes two articles by Keith and Ken, and one by Dr Algeo of this department) also is available on-line at http://www.kspg.org/pdf/03fieldguide.pdf. Part of the conference included a formal ceremony wherein the town of Middlesboro was designated by the Society as a "Distinguished Geologic Site" in the Commonwealth (the third such site in this ongoing series).



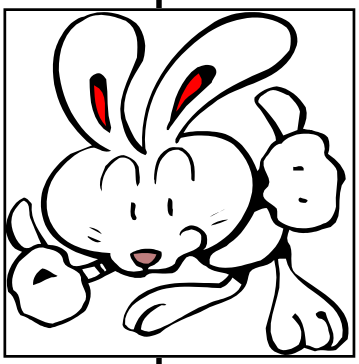
Turning to matters of curriculum, the new Geology degree program is now going through its final approvals across campus and should be officially rolled out in Spring 2005 (see related GEOGRAM article). The Department has created four new paths to the baccalaureate degree that are designed to better serve our pre-professional majors as well as attract a new clientele. Review of the current curriculum began in earnest in Fall 2002, exactly ten years since the present degree program was inaugurated. Part of the revision process took Drs May and Kuehn to Frankfort, Kentucky, to sit for the day-long ASBOG (National Association of State Boards of Geology) examination. Now that more than 30 states, including Kentucky, require this exam as part of their professional geologist registration process, Ken and Mike wanted to experience it first-hand with an eye toward whether or not they were teaching "the right stuff." He is pleased to say they both came through it successfully and the experience was very helpful in regard to the curriculum revisions.

In spring 2004, Ken began a new activity serving as the Faculty Associate in the WKU Faculty Center for Excellence in Teaching (FaCET). In this capacity he works with professors and graduate teaching associates from every corner of the campus to help improve the process of teaching and to help meet University goals of quality enhancement and student engagement. Thus far, he's attended three professional meetings on these topics, one of which included a visit to the Center for Educational Excellence at the US Air Force Academy in Colorado – a very enlightening experience. This Fall Ken will present a related workshop at the annual conference of the Professional and Organizational Development (POD) Network in Higher Education to be held in Montreal.

One final issue, one Dr Kuehn needs your input on, concerns a statewide committee he is chairing for the Kentucky Society of Professional Geologists. It is called "KSPG 2013" and the committee is tasked with forging a long-range vision for the geology profession. Where and how do you see the discipline of geology in 10 years time? Ken would like Kentucky geologists to have a permanent address and presence in Frankfort, just as the registered engineers do today. What are your ideas? Please keep in touch and have a great year!

REZAUL MAHMOOD had another productive year. As usual, teaching and research activities kept him quite busy. This year he successfully offered a

much-needed new course, Dynamic Meteorology. In addition, Rezaul continued to teach meteorology, weather and forecasting, and spent significant time helping to expanding the climate and meteorology program. Much of his research time was occupied by soil-moisture modeling (as it relates to climate), impacts of land-use change on long-term climatic records, hydrometeorology of flash flooding in eastern Kentucky and the Appalachian region, and monsoon dynamics. It is particularly satisfying that a number of students (two graduate and four undergraduates) are currently involved in these research activities and thus gaining hands-on experience. Rezaul published results of his research in peer-reviewed journals including the *Journal of Hydrometeorology, International Journal of Climatology*, *Journal of Hydrology*, and *Applied Geography*. He is delighted to report that some of his work has been used as key citations in a forthcoming report to be published by the National Research Council/National Academy of Sciences.



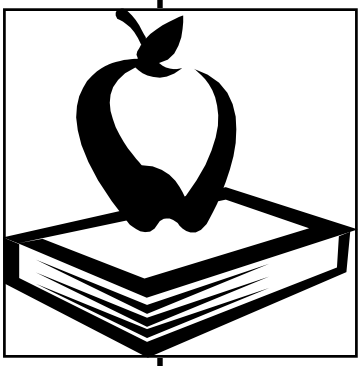
As in the past, he was involved in several multi-departmental and multi-institutional grant-writing activities for extramural funding to support research here at Western. This year Dr Cathleen Webb (Dept. of Chemistry) and Rezaul received $254,000 competitive grant funding from the National Science Foundation's (NSF) Research Experience for Undergraduate (REU) program. This project helped them to recruit eight extraordinary undergraduates from all over the nation to come to WKU for 10 weeks to conduct research. Seven other WKU faculty, including two from our own Department (Drs Groves and All), participated as faculty mentors for these students. The team has successfully completed the first part of this three-year project. Participating students focused their research on hydroclimatology, hydrology, water quality, and water chemistry issues around the Mammoth Cave National Park and the Upper Green River watershed. These activities allowed students to gain hands-on research experience in a close one-to-one mentoring environment. It is expected that students will present their research at various national meetings, and selected works are going to be published in peer-reviewed journals with the students as co-authors.

Additionally, Rezaul received competitive research funding ($10,000) from the National Oceanic and Atmospheric Administration (NOAA) to study hydro-meteorological aspects of an Eastern Kentucky flash flood. Currently, two students (Christina Henry and Daniel Champlin) are working in this project. This funding helped to initiate a collaborative research partnership with the National Weather Service (NWS). In fact, recently Ms. Henry was invited by the NWS (Jackson, Kentucky, office) to present her research. It was a great experience for her. Rezaul is also currently running the MM5 meso-scale meteorological model as a part of this project. WKU is the only institution in the state running this large state-of-the art atmospheric model.

This year Rezaul and Dr Trapasso received funding ($24,000) to purchase a NOAA-Port and a 3.7-meter dish antenna. This will allow the Department to receive real-time meteorological data (from minutes to an hourly time scale) for the whole North American continent through satellite feed. It is expected that this facility would significantly improve teaching and research capabilities in climatology and meteorology. Rezaul and Dr Foster received $24,000 to establish three mesonet sites in and around Bowling Green. Each of these sites will measure temperature, precipitation, relative humidity, wind speed, wind direction, solar radiation, and soil moisture at four depths (10, 25, 50, and 100 cm). Measurements will be completed every 5-minutes and reported on a real-time basis through the Kentucky Climate Center's web site. In addition, Dr Foster and Rezaul received funding ($25,000) to acquire the SMARTS system from University of Delaware. WKU and Kentucky will be the first University and state, respectively, in the nation to operate this system outside Delaware. The system dynamically adjusts bias in radar-estimated precipitation and provides the most accurate assessment. It will open up significant opportunities in hydroclimatic and hydro-meteorological teaching and research here in the Department. Also, the WKU research council funded Rezaul for his activities in soil-moisture modeling ($5,000) and small-scale precipitation variability ($1,000). The latter funding allowed him to maintain

the high-density rain-gauge network (funded last year for instruments) in and around the Mammoth Cave National Park

Rezaul has continued to review papers for prestigious academic journals, including *International Journal of Climatology, Climate Research, Physical Geography, International Journal of Environmental Pollution,* and *Journal of Spatial Hydrology*. Moreover, he went to Philadelphia, PA (AAG annual meeting) to organize two special sessions in hydroclimatology. He chaired one of these sessions and presented a paper. Rezaul mentored two graduate students, Daniel Taylor and Christina Henry, who presented papers at this meeting. He also traveled to the National Science Foundation to explore funding opportunities for his research. On a personal note, Rezaul and his wife Rawnak have become proud parents of their first child, a baby boy Onjoy. It has been the most wonderful experience. As you can imagine, parenthood keeps both of them quite busy.



MICHAEL MAY has enjoyed his 8th year in the Department and has most especially enjoyed new field adventures this past year, thanks to his colleagues who provided innovative learning experiences for students and faculty. One of the great field experiences included Mike as a participating faculty member, guiding and teaching students among modern carbonate environments on San Salvador Island, Bahamas, during the March spring break. This unique learning opportunity was spearheaded by Dr Fred Siewers in the Department and it was wonderful to also have WKU Biology colleague, Dr Ouida Meier, a Holocene coral reef specialist, participate as well (see also Dr. Siewers' article on the Bahamas adventure in this issue). Another field highlight saw Mike heading off to Park City, Utah, and environs to aid Dr Andrew Wulff for a couple of weeks. Andrew directed this six-week-long geology field camp for students from about half a dozen Big 10 universities and WKU (see also Dr. Wulff's article on field camp). Yet another travel adventure had Mike trekking off to Seattle last fall for the national Geological Society of America meeting, along with all of his geology colleagues. Mike and Dr Ken Kuehn presented a poster on the lack of a National Environmental Policy Act (NEPA) process or geological characterization associated with thousands of acres earmarked for the proposed Kentucky Trimodal Transpark in Warren County, Kentucky.

Also last fall, Dr May traveled with the majority of his geology colleagues to an excellent Kentucky Society of Professional Geologists (KSPG) field conference to the Middlesboro, Kentucky, area. This trip featured study of an ancient meteor impact structure, Appalachian structural geology, engineering geology of the Cumberland Gap Tunnel and other interesting sites. It was nice to see WKU geology alum, Keith Milam (presently a Ph.D. candidate at the University of Tennessee, Knoxville), as one of the key leaders of the field conference (see also Dr Kuehn's article on the Middlesboro field conference).

In addition to meetings, field camp, field courses, and field conferences, Mike also reached a few milestones this past year. His environmental and geological education efforts extended for the general public and schools, service on the Bowling Green Storm Water Advisory Committee, and participation in drafting statutes and guidelines on behalf of the Commonwealth's Environmental Cabinet on Brownfield sites were just some of the accomplishments that propelled him to be selected for the 2004 Ogden College Public Service Award. Dr May was also pleased to get his and a co-author's paper titled "Introducing Students to Environmental Geophysics in a Field Setting" published in the May 2004 issue of the *Journal of Geoscience Education*. This paper chronicles the field geophysics short course that was offered a couple of times at WKU and Lost River Cave. It remains to be seen when the EPA-WKU joint course will be conducted again. Mike also took and passed both the fundamentals of geology and practice of geology ASBOG (National Association of State Boards of Geology) exams in Frankfort last fall. By passing these exams, Mike could practice (as of this date) in 29 states as a licensed geologist if he desired to fill out paperwork and pay license fees for a given state. He is, however, registered for the Commonwealth and Indiana. This should aid the geologists in aligning some of the

geology curriculum and student experiences so students will be more successful when they choose to sit for their own ASBOG exam (see also WKU press release - http://www.wku.edu/news/releases04/january/geologists.html).

Over the past spring and summer, Mike also re-established ties with the University of North Carolina, Chapel Hill, teaching a week-long environmental regulations course in Norfolk, Virginia, with former WKU engineering technology colleague, Dr. Rod Handy (now at Purdue University). The May family enjoyed this trip to the Chesapeake Bay area this past July. The May family also enjoyed travel to the Colorado Rockies over the summer to visit Mike's wife Beth's family and enjoy MLS games, mountain biking, and hiking. Any spare time Mike has is dedicated to organic gardening and, along with Beth, running sons Kevin (almost 10) and Peter (11) to soccer, basketball, cross country, and academic team meets. This upcoming academic year, Mike is looking forward to continuing to work with MS Geoscience student, Scott Schoefernacker (B.S. Geology, Vanderbilt) on outcrop and subsurface aspects of Mississippian and Pennsylvanian rocks north of Bowling Green and using digital Geological Quadrangles and software that aids in producing stratigraphic columns for correlation. Scott and Dr May will be presenting some of their research at the upcoming Geological Society of America (GSA) meeting in Denver later this fall. Other projects Mike continues to work on include the origin of terra rossa in the karst areas of Indiana and Kentucky (Academy of Science presentation last fall in Bowling Green) and collaborating with colleagues from the Indiana Geological Survey and Lake Superior State University in Michigan on conodont biostratigraphy in Mississippian (Chesterian) and Pennsylvanian rocks in south central and western Kentucky (paper presented at GSA regional meeting in St. Louis this past spring).

FRED SIEWERS enjoyed a very full and productive year at Western Kentucky University. He offered courses in Historical Geology, Paleontology, Earth System Science – specifically as an on-line course for pre- and in-service teachers - and, for the first time, a new field course on San Salvador Island, Bahamas. Of those courses, the "Geology of the Bahamas" course made the most "waves" and is the focus of a companion piece in this year's GEOGRAM.

Fred was quite active on the research front, both with his own work and the work of his students. He continued to devote time to basic geology research and to his research efforts in geoscience education. His geology research was focused primarily on problems in carbonate sedimentology; specifically, the diagenesis of carbonate minerals in Pennsylvanian coal-ball concretions. Recent work has involved the textural and geochemical characterization of magnesian calcites and proto-dolomites occurring in those deposits, which basically translates into a lot of transmitted-light microscopy and SEM time! Results from that work were presented this past year at the annual meeting of the American Association of Petroleum Geologists (AAPG) in Dallas, Texas and at the annual meeting of the Kentucky Academy of Science (KAS) in Bowling Green. His work in geoscience education – mostly related to his NASA based on-line course for teachers in Earth System Science – resulted in a presentation at the American Geophysical Union (AGU) meeting in San Francisco.

Fred directed two undergraduate research projects during the past year: a project conducted by Pat Allen on fine-scale correlations of Pennsylvanian sandstones in the Shanty Hollow area (north of Bowling Green) and a project conducted by Adam Smith on the mineralogy and formation of geodes in the Mississippian Salem and Warsaw Formations of south-central Kentucky and northern Tennessee. Both Pat and Adam's work resulted in presentations at the annual KAS meeting. Adam gave additional presentations on his work at the North Central Regional Meeting of the Geological Society of America in St. Louis, and at the annual WKU Student Research Conference sponsored by Sigma Xi. Adam's excellent presentation at Sigma Xi qualified him to compete against 4 other top presenters for the best undergraduate presentation award of that meeting. Although he did not take the top prize, the fact that he

was asked to compete against the top undergraduate researchers at WKU speaks volumes for the quality of his work and his presentation skills.

Fred worked hard on his own professional development this past year, including three trips to San Salvador Island for the purposes of course development, teaching, and the establishment of a new research initiative in Quaternary geology and global environmental change. He also advanced his expertise in geochemistry by taking a short course in geochemical modeling in association with the annual meeting of the Geological Society of America in Seattle. Although not directly related to his geology work, Fred also advanced his interest in traditional roots music (bluegrass, country, blues, folk, etc) by co-hosting the popular weekend radio program *Barren River Breakdown* for Western's public radio station WKYU-FM. Traditional music fans throughout western Kentucky, southern Indiana, southern Illinois, and northern Tennessee have been catching Fred's shows throughout much of this past year. All reports indicate his shows have been popular and a big success! Roots music fans outside of the listening area can catch Barren River Breakdown on the web by visiting http://www.wkyufm.org/BRBpage.htm, 12 noon CST, 1 p.m. EST.

Like other faculty in the geology program, Fred was actively involved in the restructuring of the undergraduate geology major (see companion article) and with numerous service activities for area schools. Of particular note in this regard was Fred's work with Dr Andrew Wulff, faculty in the Department of Physics and Astronomy, and faculty in the School of Education, who all collaborated on a NASA-supported initiative to advance middle-grade teachers' understanding of geological and cosmological time. The initiative entitled "How Old is Your Universe: Workshop for middle-grades science teachers" was offered this past June and will be offered again during the 2004-2005 academic year.

Finally, Fred is pleased to announce that he received tenure and was promoted to Associate Professor during this past academic year. Congratulations Fred! As always, Fred loves to hear from interested students, past students, alumni, and anyone interested in geology and geoscience education. Send him some e-mail or, better yet, stop on by. His door is always open!

L. MICHAEL TRAPASSO is alive and well and doing his usual routine. He still teaches the introductory meteorology course (GEOG 121) and his favorite upper division course, GEOG 426 - Applied Meteorology/Climatology. Since his new physical geography textbook came out last Fall, he has been scheduled to teach more sections of GEOG 100. According to him, "It's very gratifying to use your own book in class." As a new teaching challenge, he was asked to revive and revise the old GEOG 222 (Observational and Analytical Meteorology). This course was last taught by the late Willard Cockrill. (You older alumni will remember Mr. Cockrill.) Dr Trapasso is excited about teaching the new and improved course. He says it will be a nice change of pace.

On the professional front, Dr Trapasso is still active in research and publication. Last year he presented at the National Meeting of the Association of American Geographers in Philadelphia. He has also given numerous talks and media interviews concerning weather/climate, and is still called upon to give expert testimony in court cases where atmospheric factors play a role. He has submitted some of his sabbatical research entitled "Tourism and the Ozone Hole: Varying Perceptions," appearing as Chapter 16 in a new book titled *Climate Tourism and Recreation* (Channelview Press, London, England). This book will be published in December 2004.

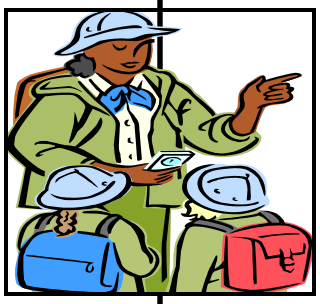
Dr Trapasso recently received some good news; evidently his textbook, *Essentials of Physical Geography* by Gabler, Petersen, and Trapasso, sold enough copies that the Publisher (Brooks-Cole) has approved the next edition. For the next few years, Dr. Trapasso will be back in the textbook-writing mode. He is very happy with the success of the book so far.

On the travel front, Dr Trapasso is still fascinated with ancient cultures and civilizations. Last summer he visited the countries of Bolivia and Peru to visit more Inca and pre-Inca (Tiwanaku Civilization) sites (see story on p. 6). Having visited the better known Aztec, Maya, and Inca sites, he is now going further back in time to civilizations that pre-date the "Big 3," as he refers to them. January found Dr. Trapasso back down in Mexico, this time in Oaxaca State. There he concentrated on Toltec, Mixtec, and Zapotec sites, which pre-date the Maya and Aztecs. He found an abundance of temples and pyramids with crawl spaces

leading to subterranean chambers covered with symbolic art — doing some real "Indiana Jonsing-around," as he calls it.

In mid-July 2004, Dr Trapasso planned on heading northward to explore the land of the Vikings. He will first revisit Iceland; from there he will travel to Greenland, and later to Newfoundland, Canada. His theme is the Viking migration from their homeland of Norway (where Trapasso started this quest) and ending in North America, ca. 1000 c.e.

On the Civil War front, Dr Trapasso is still considered a local Civil War expert. Last year he researched, wrote, and supplied imagery for historical interpretation signs at Reservoir Hill and at the Hobson House in Bowling Green. He has also been asked to research and work on the new brochure on the Bowling Green Civil War Driving Tour. He says he finds this type of research both fun and relaxing.



There was some good news for Trapasso with respect to Civil War reenacting. After eighteen months of looking for a good warhorse to ride, he finally found a tall (16 hands high), dark gelding with lots of spirit. Trapasso has ridden him in two Civil War reenactments so far and the two are becoming a team. So, after a long hiatus, he's 'back in the saddle again' and rediscovering his old hobby. Even now new adventures await him. He was recently contacted by the 10th U.S. Cavalry (Buffalo Soldiers) re-enactors in Colorado. They were in need of a white officer. Historically U.S. Colored Troops (so called in the 1800s) were always lead by white officers (according to Army Regulations of the time). So when the 10th U.S. Cavalry wants to reenact with historical accuracy, they need that white officer. Dr Trapasso was invited to play that part and rode with the 10th Cavalry in Denver, Colorado, in late August.

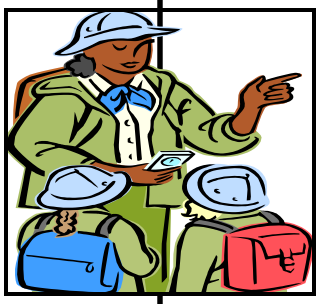
To sum it all up … Trapasso is still up to his usual routines, but once again showed that an old dog can learn some new tricks. He's curious to see what new tricks his former students are up to, and he loves to hear from alumni.

ANDREW WULFF has been settling into life at WKU in the "hard-rock" side of the geology program. This past year was largely focused on building collaborations (within the Department, Ogden College, and outside the university), expanding the possibilities for field studies, and investigating ways to improve earth-science education and opportunities for K-12 students. Dr Wulff was a co-investigator on a proposal for a pilot study designed to enhance the development of rural middle-school science and mathematics teachers. Dr Wulff (along with Dr Siewers and members of the Astronomy faculty) co-led a series of workshops titled "How Old Is Your Universe," designed to better prepare both pre- and in-service middle-school science teachers in central and western Kentucky. He has been pursuing affiliation of WKU with the NASA GLOBE program, and has been working with Drs Kenworthy and Dr Mahmood to initiate a soil-moisture sampling program in local schools in collaboration with the international GLOBE SMC program. He and the other geology faculty have been examining the existing Geology curriculum and have proposed a number of changes designed to give the degree program more flexibility, present more options for interested students, and increase the professionalism of graduating majors. Everyone is excited about the changes and is looking forward to seeing an immediate impact on the degree program. Drs Wulff and Siewers also served on an ad-hoc committee charged with proposing ways in which the Geology program could be enhanced, and they are writing a report to that effect.

Dr Wulff authored or co-authored three grant proposals, requesting funding to support research on residential radon, the age and geochemistry of volcanic tuffs in Java, and volcanism associated with large-scale extension in the Mojave Desert. He was the recipient of an Oak Ridge Associated Universities Junior Faculty Grant (see http://www.wku.edu/news/releases04/may/awards.html) and is anxiously awaiting word on the other proposals. He and Dr Groves co-led a challenging and fun departmental fieldtrip centered on a traverse across central California, examining the geology of the southern Sierra Nevada, Great Valley, and central coast, alternative energy sources (geothermal, solar, wind, water), the caves and quaternary features of Sequoia-Kings Canyon National Park with the Friends of the

Pleistocene – and much more! Details may be found at http://geoggeol.wku.edu/california/index.html. Dr Wulff is planning another departmental field course with Dr Deal to explore the geology and cultural features of Hawaii in May of 2005.

Andrew has been active with his various research interests and had a paper entitled "Using Inquiry-Based Methodologies to Ease the Pain of Learning Mineral Formulae and Analytical Techniques" published in a special issue of the *Journal of Geoscience Education*. Another manuscript will be published in the *Journal of Geological Resources* soon. He hopes to have at least two other manuscripts accepted early this semester. Andrew chaired a session on "Arc and Continental Magmatism" and presented a paper at the international meeting of the American Geophysical Union. Two of his undergraduate students (Mollie Laird and Jessica Campbell) presented their research (on Chilean volcanics and Li-rich micas respectively) at the national meeting of the Geological Society of America, two students (Patty Chalmers and Mark Graham) presented research at the combined SE-NE GSA meeting (on geothermometry/geobarometry of pelitic schists and the development of a new interactive GIS for examining geologic quads), and two students (Cody Holbrook and Rusty Bell) submitted an abstract dealing with the geochemistry of tuffs in Java to the Sigma Xi conference held at WKU.



Andrew has also been working to improve the undergraduate research facilities in the Department and has been expanding the rock and mineral collection housed in EST. He received and inventoried a rock and mineral collection graciously donated by Pat McCubbin to honor her late husband who taught Industrial Arts at Bowling Green High School for thirty years. Dr Wulff (along with Drs May and Siewers and several students) packed, moved, and inventoried a most generous donation of field records, books, samples, and other wondrous memorabilia from the Gildersleeve family. Dr. Benjamin Gildersleeve worked as a geologist for the U.S. Geological Survey in Kentucky for years, publishing 15 maps and numerous reports. He lived in Bowling Green and is survived by two sons who oversaw the moving of materials and generously gifted $50,000 (matched by state funds) to the geology program. Dr Wulff welcomes any other additions to the departmental collections – from anywhere!! He also purchased six computers to be used for geological modeling purposes, received a grant to purchase a Nikon digital camera for use on the student petrographic microscopes, and was able to relocate two large stainless steel sinks to the Department from Grise Hall.

Dr Wulff completed his second year as Director of the Wasatch-Uinta Field Geology Course**.** This has been one of the premier field-geology courses in the country since its inception 39 years ago. The best students from five Big-10 research universities attend and the top students are offered USGS and NAGT internships, in addition to cash awards and scholarships. Four students from WKU (Laura DeMott, Patty Chalmers, Amanda Mullen, and Adam Smith) have been able to take advantage of this opportunity and have represented WKU Geology very well. This past summer, Dr May also joined the course as an instructor for the first session.

This has also been a year of involvement in the community and Andrew made a number of presentations on rocks, minerals, volcanoes (you name it!) at local schools, served on the Science Committee at Potter-Gray Elementary School, played bass and sang around town in a rock band, directed a play, and was the coach of the WKU men's lacrosse team. A busy year to be sure!

ALUMNI CONTRIBUTIONS

Contributions to the Department of Geography and Geology Development Fund in 2003-2004 increased over the past year. The number of individual contributions to our Fund topped the 90 mark! Thanks to everyone for helping us achieve our goals this year, but we continue to need your help now more than ever as budgets remain extremely limited; your contribution will go a long way to ensuring that we have sufficient supplies and equipment for student use. When you receive a call from our students, or whenever the spirit moves you, make a contribution to the Department and to the University. You can also gift funds to the Hoffman Memorial Fund, in memory of Wayne L. Hoffman, who led the Department for over 20 years. Be sure to specify that the money be designated for use by the Department of Geography and Geology. Our profound thanks to our contributing alumni. We gratefully acknowledge gifts from:

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Gregory Zoeller

ALUMNI NEWS

Chandra Beyer (Geography 2002) just finished basic training with the US Army and is now considering her options. She wants to attend graduate school and ultimately work for NASA as an engineer or astronaut. Working at the Weather Channel would also be fun!

Michael Briggs (MS Geoscience 2004) works for the Mid-America Regional Council as a transportation planner. He enjoys living in Kansas City.

Gilbert T. Calhoun (Geography 1955) currently serves as a member of the Town of Hilton Head Planning Commission. Recently he returned to serve a 6-month tour with NATO's command, control, and communications agency as a consultant.

Brandon Cowles (Geography 2003) writes that after finishing a seasonal job at Mammoth Cave Hotel, and a temporary internship at the Social Security Administration, he has taken a full-time position with the Graves-Gilbert Clinic.

Laura Demott (Geology 2003) is a Graduate Student

at the University of Texas School of Geosciences in Austin and is working on her Master's degree.

Corey Fogle (Geography 2001) is a helicopter pilot with the U.S. Navy and is based in Norfolk, VA.

J. Alan Glennon (MS Geoscience 2003) is a doctoral student in geography at the University of California, Santa Barbara.

Mike Hill (Geography 1999) is a community planner with Oldham County Planning and Zoning Commission.

Joy Hinkle (Geography 2002) is working towards her MPA in Environmental Policy at Georgia State University. She works part time at the Georgia Conservancy with the Georgia Water Coalition on water conservation and supply planning issues. Joy co-presented a paper at the 2004 American Water Works Association Water Resources conference in Austin, Texas.

Kieran T. Hosey (Geography 2001) is employed as a geologist for an environmental consulting company in Syracuse, NY, and writes that he loves shoveling snow!

Joe Hughes (Geology 1960s) has retired to northern Arizona and writes that he and his wife still enjoy hiking trips into the remote areas of the Grand Canyon's North Rim.

Jenna S. Medlin (MS Geoscience 2004) has found a GIS position with the Thomas & Hutton Engineering firm in Mt. Pleasant, South Carolina. She's as happy as a clam!

Keith A. Milam (Geology, 1997) is a PhD candidate with the University of Tennessee Planetary Geosciences Institute. He was co-leader of the 2003 field conference of the Kentucky Society of Professional Geologists, which visited the Middlesboro KY, meteorite impact site. He also presented a paper *"Central uplift formation at the Middlesboro impact structure, Kentucky, USA"* at the 35th International Lunar and Planetary Science Conference in Houston, for which he won a "best paper" award. Keith is featured in the April-May 2004 issue of Smithsonian's *Air and Space* magazine, in an article about meteorite impacts in the U.S. He provides the writer a tour and explanation of the Middlesboro impact site. Keith maintains a personal website located at http://web.utk.edu/~kmilam/.

Betty-Jane Stradtner Nichols (Geography 1985) — aka "Charlee" — is a senior GIS technician for the Marion County Board of County Commissioners in Ocala, Florida. Charlee, husband Tim, and kids Tim and Katie, are enjoying living in Florida's horse country.

Bethany Overfield (Geology & Geography 2001) is a staff geologist with the Kentucky Geological Survey. She sends greetings to the Department and writes that she started graduate school this semester at UK. She is attending UK part-time so that she can continue to work at the KGS full-time.

Rhonda Pfaff (MS Geoscience 2003) works for Environmental Systems Research Institute (ESRI), the world's largest developer of Geographical Information Systems (GIS) software, in Redlands, Calif., as an ArcGIS documentation product specialist. She recently had an article published in *ArcUser* (along with Alan Glennon—see WKU story online at: http://www.wku.edu/news/releases04/august/geograds.html

T. Scotty Pruett (MS Geoscience 2000) is a Challenge Course Coordinator for Campus Recreation at Middle Tennessee State University, and he also teaches World Regional Geography part time. Scotty recently proposed to his fianceé in the market place at Chichen Itza, Mexico.

Jerry Wallace Ralston (Geography 1969) completed his 4th year as superintendent of the Barren Country school system. He recently earned a Ed. D. in Educational Administration at the University of Kentucky. Jerry's wife Marcella (WKU 1973) teaches 5th grade at Red Cross Elementary, daughter Laura (WKU 1999) teaches special education at Drakes Middle School in Warren County, son Jeff is a senior majoring in Agriculture at WKU, and son Ben is majoring in education at Murray State.

Timothy Rink (Geography 2003) is working as a GIS analyst for ARCADIS in Atlanta, GA.

Ryan Robinson (Geography 2001) works as a Planner for a Design/Building firm in Bradenton, Florida. He thanks Dr Crawford for inspiring him in Geography 100 some eight years ago.

Deven Carigan Tolliver (MS Geoscience 1998) is an Environmental Scientist II with the Division of Water, Watershed Management Branch, in Frankfort, KY. She married her high-school sweetheart in March 2003 and is expecting their first child. Deven writes "I know it's still a really cool and fun department."

Josh Van Duzer (Geography 2002) is pursuing a Master's degree in planning and GIS in the Department of Geography at the University of Akron, OH.

Wesley T. Wright (Geography 2000) continues to enjoy his position as planner for the Hardin County Planning and Development office in Elizabethtown, KY.

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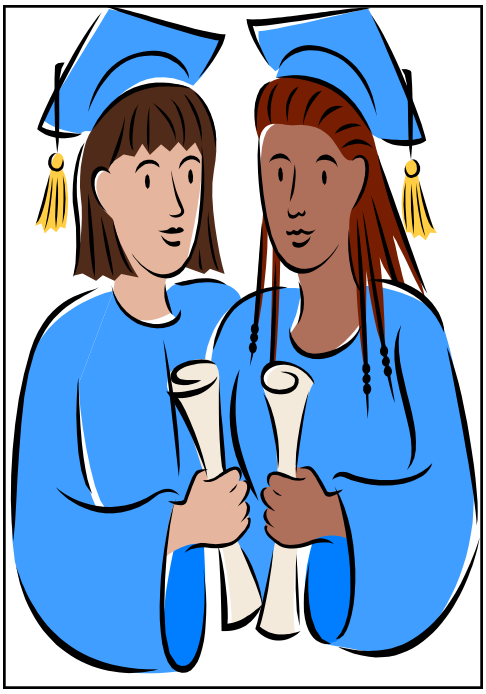

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david.keeling@wku.edu
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