Fall 2003

Geogram 2003

David J. Keeling Editor
Western Kentucky University

WKU Department of Geography and Geology

GEOGRAM

Fall 2003

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

Dear Friends,

2002-2003 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:

☺ 47 students attended eight professional meetings and conferences, with 32 presenting research papers or posters.

☺ 40 students participated in departmental study abroad, field camps, and field trips during the year.

☺ A $100,000 endowment to support the Geology program was received this year.

☺ The Department awarded 14 GIS Certificates this year, while another 25 students have completed half of the certificate requirements.

☺ The Department completely revised and restructured a core course in the geography curriculum.

☺ Faculty visited 15 overseas locations for research, professional development, meetings, study abroad programs, study tours, and collaborative activities.

☺ The Department organized and hosted the annual National Geographic Bee, attended by 100 middle-grades students and 200 parents and teachers.

☺ The Department organized and hosted an International Karst conference, attended by the world's foremost karst scientists.

A Letter from the Department Chair

☺ 51 students were actively engaged in applied research under faculty supervision through the Programs of Distinction.

☺ A Master's student has been hired by ESRI, the world's largest GIS company, after receiving a student scholarship to attend the annual conference.

☺ Action Agenda funds were used to set up a new rain gauge monitoring system at Mammoth Cave National Park, and to purchase Kentucky Digital Maps for student and faculty research.

☺ The Department's Peer Tutor program has helped many at-risk freshmen and sophomores in the general education classes.

☺ New short courses for non-traditional and continuing education students and community members were offered during the Summer session.

Faculty continued to excel in scholarship, research, and professional development, convening and/or participating in over 20 professional workshops (including two in China, one at the USGS mapping center in South Dakota, one in San Diego organized by the American Council on Education, and two in Washington DC) and presenting approximately 50 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,

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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, seven faculty reviewed manuscripts for academic journals or publishers, and one faculty is a co-author on a new textbook titled *Essentials of Physical Geography*. Faculty research articles appeared in such diverse outlets as the *Professional Geographer, Bulletin of the American Meteorological Society*, *Journal of Cave and Karst Studies*, *Ground Water*, and *The North Carolina Geographer*, among others. Fifteen faculty research articles or book chapters are either currently in review, revision, or awaiting publication.

Faculty also gave about 78 academic and community talks during the academic year, including presentations at universities and conferences across the United States, in China, and in Europe. In addition, faculty visited 15 overseas locations for research, professional development, study abroad programs, professional study tours, meetings, and collaborative activities with other institutions (including two trips to China, Chile, several trips to Europe, and the South Pacific). Two faculty led the Department's study abroad program to Australia in July and August last year, the Department Head served as a Study Tour Lecturer on educational programs co-sponsored by the American Geographical Society to Chile and the Falkland Islands (November) and to Eastern Europe and Spain (June), and seven faculty led or participated in field trips for students around the U.S.

The students and faculty of the Department of Geography and Geology have done exceedingly well during 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 over the coming year.

Best Wishes
David J. Keeling
Department Head

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*** HOMECOMING ***

Saturday, November 1, 2003

** 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 new 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 now 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 the current syllabus attached, along with links 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, 2002-03

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 2002-03 academic year, Laura DeMott received the Outstanding Geology Senior Award, presented by Dr Kenneth Kuehn. Sarah Marcum received the Ronald R. Dilamarter Outstanding Senior in Geography Award, presented by Dr. Katie Algeo. And Rhonda Pfaff received the Outstanding Geoscience Graduate Student award, presented by Dr. Chris Groves.

Dr. Fred Siewers presents Laura DeMott with the Outstanding Geology Senior Award at the Ogden College Award Ceremony, May 2003

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Congratulations to ALL our Outstanding Students!

Introducing Our Newest Faculty Members:

Dr. Stephen Kenworthy

Dr Stephen Kenworthy joins the WKU faculty this fall after two years of postdoctoral research at the Baltimore Ecosystem Study, an NSF Long-Term Ecological Research Site focused on the ecology of the Baltimore, Maryland, metropolitan area. Dr. Kenworthy and his wife, Dr. Renae Speck, a WKU alumnus, are looking forward to exploring the Bowling Green area and getting to know the community. They enjoy camping, hiking, and canoeing, and are novice bird watchers. Stephen and Renae also enjoy yoga as a way to relax and focus. They have settled (for the time being) in Franklin, KY, with their two cats, Nixon and Isabel, who are slowly adjusting to the new environment.

Dr. Kenworthy's professional interests include a range of environmental issues related to patterns of water and sediment flux within watersheds and the influence of these processes on stream-channel morphology, biogeochemistry, and stream ecology. Dr. Kenworthy's research has included field and laboratory studies of fluid flow and sediment transport dynamics in river channels, as well as intensive field monitoring of soil moisture patterns and stream nutrient loads in small suburban watersheds. He has also worked with aquatic biologists on understanding the role of floods as ecological disturbances in fluvial systems.

One of Dr. Kenworthy's primary research topics is the influence of hydrologic regime and sediment transport dynamics on the ecology of streambed communities, including patterns of physical habitat formation, substrate disturbance, and flow-mediated dispersal of organisms. Specifically, he has focused on the role of sediment entrainment in regulating patterns of dispersal of aquatic insect larvae during floods in gravel bed rivers. Dr Kenworthy plans to extend this

research through collaborations at WKU aimed at quantifying how patterns of streambed stability and flow-driven dispersal of organisms interact to regulate spatial distributions of streambed populations at the watershed scale. Ultimately, Dr Kenworthy believes this research will help natural resource managers to understand how patterns of land-use change and disturbance by flooding affect aquatic ecosystems and to develop management practices that limit the negative ecological effects of human activities.

Dr. Kenworthy will be teaching introductory courses in physical geography and environmental science for Fall 2003, and will be developing courses in watershed hydrology, fluvial geomorphology, and hydro-ecological perspectives on monitoring and management of river channels and watersheds. He is looking forward to working with students in the classroom and the field!

Margaret Crowder

Coming to us from 20 miles south in the metropolis of Franklin, Kentucky, Margaret Crowder joins the Department as a full-time instructor this year, after serving as an adjunct faculty member since the spring semester, 2002. She has a Bachelor of Science degree in Geology from right here on the hill (she received the Department's Judson Roy Griffin Award for the Outstanding Geology Student in 1994), and a Master of Science in Teaching with an emphasis in Geology and a minor in Education from the University of Florida.

At Florida, Margaret worked on testing the potential application of Sr/Ca ratios in the aragonitic shells of mollusks as a paleothermometer. While still interested in paleoclimate studies, she is now focusing on ways to work with teachers at the primary and secondary levels to encourage a better understanding of the geosciences and their importance in our educational system.

Margaret has taught Historical Geology, Oceanography, and two one-time offerings: Geology in the Movies (bad geology movies are an addiction!) and Backyard Geology. She is currently teaching Introduction to Geology and a laboratory for Physical Geology and will branch into cyberspace to team teach an on-line course for the spring semester.

Her personal interests include all things animal. She has three dogs, three cats, two degus, a fish, and various foster babies from the BG/Warren County Humane Society. (Note from Margaret: please save a life and adopt a pet (www.petfinder.com)!) Margaret also co-hosts a Sunday evening radio show, *Lost Horizons*, on D-93 (5-7 pm) that features jam bands and the occasional bluegrass tune.

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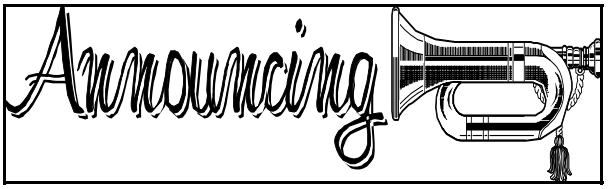
William Blackburn

William Blackburn has been added to the faculty as an instructor responsible for various classes offered at the Glasgow campus. Additionally, he will be covering courses, as needed, here on the hill. His current responsibilities include Physical Geography, Geography of Kentucky, and Geography of North American. In the coming spring semester, he will be adding World Regional Geography to his offerings.

After several years in the real estate business, as an agent and manager, Will decided to return to school, receiving his B.S. in Geography, with a minor in City and Regional Planning, at Western in 1999. He received an M.S. in Geoscience degree from Western in 2003. Will's field of study is Physical Geography with an emphasis in Climatology. His research explored, and continues to explore, unacceptable elevated ozone concentrations at Mammoth Cave National Park, and the extent to which the Bowling Green/Warren County area influences those ozone levels. Will has great interest in aspects of Physical and Cultural Geography and he looks forward to teaching in both of these fields. The appointment to the Glasgow position should provide ample opportunity.

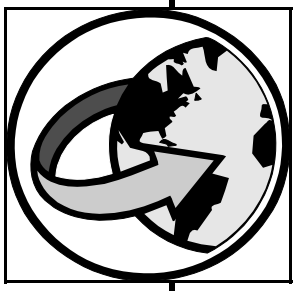
Interests outside of academia include spending time with family, gardening, restoring antique jeeps and tractors, farming, and music. The farming interest is satisfied with a small track of family land in Barren County that boasts approximately 1000 cultivated Black Walnut trees. Will and his family enjoy water sports and they spend expendable summer time, which seems to be ever dwindling, at the Barren River Lake.



M.Sc. in Geoscience Degree

The world around us is changing rapidly. From globalization to local economic expansion, from the industrial revolution to the technological revolution, and from the blackboard to the electronic whiteboard, changing times mean that our mission must change as educators if we are to provide students with the skills they need to be successful citizens, individuals, and members of their community. With these changes in mind, the Department of Geography and Geology offers a two-year Master of Science Degree in Geoscience. Students can choose several areas of specialization in the program, including G.I.S., geology, planning, earth-science education, and environmental management.

We are very excited about the possibilities that the Geoscience program offers our students. Although we retain a strong and important emphasis on traditional geography research tracks, such as city and regional planning. international studies, climatology, physical geography, and environmental management, we now integrate more completely all aspects of the geographic and geologic sciences into the curriculum. The Geoscience program offers more access to geotechnology courses such as GIS, Spatial Planning, Data Modeling, etc., it offers interdisciplinary approaches to solving human-environment problems, and it provides students with a much broader and more integrated set of study options than ever before imagined. The mission of the Geoscience program is to prepare students with the technical, critical thinking, communication, and research skills they need to compete effectively and successful in a variety of career options.



Over the coming year we plan to redesign several courses and to add new ones, such as global climate change and environmental ethics, as the changing environment dictates. These exciting courses will challenge students and encourage them to expand their horizons.

As we continue to improve and expand the programs we offer to students, the Department would love to hear your opinions and suggestions about new courses, program content, and other critical issues related to the curriculum. Just drop us a line by email or phone (david.keeling@wku.edu) at 1-270-745-4555 with your ideas and suggestions.

Undergraduate Programs

The Department continues to evaluate the strengths and weaknesses of its undergraduate curricula. We have recently restructured the Cartography and Geographic Information Systems track to incorporate the latest technology, and a refurbished meteorology laboratory for undergraduates is now available.

Both the Geology and physical Geography tracks are being enhanced by identifying undergraduate research opportunities under the umbrella of the College's Programs of Distinction, the Hoffman Environmental Research Institute, and within the framework of the various faculty research projects underway. These enhancements are designed to provide students with practical experience in applied research. Our new faculty, Drs Kenworthy and Wulff, are busy designing new and exciting undergraduate courses to enhance the Department's offerings in geography, geology, geoscience, and the environmental sciences. In the spring 2004 semester, Dr Siewers will offer Geology of the Bahamas, a field-based experience over Spring Break, and Dr Keeling will offer an experimental course titled "Globalization, Population, and Resources" that will examine current trends in social, political, and economic development around the world. Visit WKU's online Topnet system (topnet.wku.edu) for details of the latest course offerings.

ADVENTURES IN GEOSCIENCE

GEOGRAPHY AND GEOLOGY INTERTWINE AT THINGVELLIR, ICELAND

By L. Michael Trapasso

When I decided to visit Iceland last January, my friends asked, "Iceland in January? … Are you crazy?" I replied, "Yes … but that has nothing to do with going to Iceland in January." I was in bad need of some adventure, and also needed some time on my own. I, above all, know about the dreaded Icelandic Lows (the fierce storms of those latitudes) as well as the short days of a Northern Hemisphere winter (early January yields about 5 hours of sunlight in Reykjavik). I also know that Iceland is actively volcanic (warm ground) with a warm North Atlantic Drift current flowing by. I was willing to take my chances. As it turned out, the temperatures were mild (above freezing even at night), but overcast skies and drizzle dominated most of the available daylight hours.

At any rate, Iceland was my choice and I've never regretted it. This small island nation has a geography, geology, and history unlike other nations. For example, the term 'geyser' is Icelandic. The name of Iceland's biggest effusion is *Geysir* (pronounced gay-sur), and from this name all other steamy emissions of water were named. The country practically runs on geothermal energy! Volcanoes, active and extinct, are everywhere. Much of Iceland's surface is comprised of ancient lava flows covered by tundra vegetation. Water resources (second only to Indonesia) flow majestically over numerous waterfalls. Glaciers (which only cover about 12% of Iceland) looked fabulous, capping beautiful volcanic peaks. At night, the aurora borealis shone through the partly cloudy skies. Though I was limited to about 5 hours of sunlight per day, I made the best of it and roamed through the countryside taking advantage of every natural site I could find.

Of all the sites I visited, one will always stand out in my mind, and that place was *Thingvellir* (*Thingi* = parliament, *vellir* = plain). I had heard about this location and truly wanted to see it. At this site physical geography, cultural geography, and geology all intertwine.

Flagpole marks the Logberg of *Speaker's Stand*

Physical geography and geology come into play when you consider that this plain (more specifically a flat-bottomed rift valley) lies on the Mid-Atlantic Rift (Ridge). You'll recall from introductory classes that the Mid-Atlantic Rift runs almost from pole to pole and represents a gigantic crack in Earth's crust. The rift spreads apart at a rate of a few cm/year. The concept of plate tectonics, of course, explains continental drift, thus these massive but slow movements determine the shape and distances between the seven continents. This famous rift valley constitutes the division between the North American, and the Eurasian Plates, and farther south, the boundary between the South American and the African Plates. The Mid-Atlantic Rift runs primarily along the ocean floor (thus the name Mid-Atlantic), and the only place where the Rift runs on solid ground is through Iceland. This is the only location where one can walk across this famous Rift Valley, literally walking from the Eurasian to the North American Crustal Plate. As a physical geographer, I relished the opportunity to make this short but significant stroll. The actual Rift itself was rather small and unimpressive. It looked like an entrenched stream channel, about 7 meters deep and 2 to 3 meters wide, with a small stream running peacefully within.

Though the separation of the plates is estimated

at about 2 cm/year, the movement occurs in spurts, accompanied by serious earthquake activity and then all is quiet, perhaps for centuries. It is believed that the Rift Valley at Thingvellir was created about 10,000 years ago. In 1789 there were major earthquakes resulting in a displacement of over ½ meter along the Rift.

The North American Plate seen from the Eurasian Plate

The valley also contains *Thingvellavatn* (*thingvella* = parliament plain, *vatn* = lake). This lake is fed by a few surface streams, but mainly by glacial melt water that seeps beneath the ancient lava flows. Thingvellavatn is the largest lake in the country at about 84 sq. km. The water is crystal clear and pure enough to drink. The whole National Park area of about 50 sq. km. was quite serene and appears much the same as when the ancient Vikings viewed it.

Herein lies the other part that makes this place so unique and significant. As the name suggests, this was the site of the *Althingi*, or parliament. Iceland can truly claim the oldest, continuous-running parliament in western civilization. The Althingi was established in 930 c.e. (almost 300 years before the Magna Carta was signed). It was a place where the Viking tribal leaders came during the 10th week of summer and stayed for about 2 weeks. The place was perfect for large encampments, plenty of space for shelters to be built, abundant pasture for the horses, and a large fresh water lake with plenty of fish. These two weeks also represented a friendly gathering filled with reunions with old friends, trading goods, and celebrating with abundant food, music, and dancing.

When it came time for business, the elected leader of the Althingi would stand at the *Logberg* (speaker's stand) and recite all the laws agreed upon at previous sessions. Then the court of legislature (*the Logretta*) would exchange views, discuss matters of importance, make decisions, and set laws. No doubt matters concerning trade and business were also discussed. At times, these discussions would result in arguments, and, if all peaceful settlements failed, the two antagonists would row a boat out to '*dueling island*', out in the middle of Thingvellavatn. Two men go out, and one man comes back: argument settled. Criminals would also be judged and, if necessary, executed during this time as well … men were beheaded, women were drowned. (Well after all, we are talking about Vikings here.)

Of all the exotic places I've visited through time, Thingvellir will remain in my mind. Where else can one find such a significant geologic boundary and the place where the first inklings of Icelandic democracy both coincide so closely. Though the Vikings were rather rough in their dealings and governmental rule, we need to give some credit to these people, long thought to be so barbaric. Some people view this place as sacred with strange spiritual and mystical powers. Then again, some people like to hug trees, hear spirit voices, and talk to rock crystals. That's not my style. However, it does seem strange that, in this one place, both Earth and society made very significant advances.

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RESEARCH IN NAURU

by Richard Deal

This summer, I had the opportunity to visit Nauru, one of the least visited countries in the world. Situated just south of the equator in the western Pacific, its nearest neighbor is Kiribati. With an area of eight square miles, it is the world's smallest republic (only the Vatican and Monaco are smaller). It has a population of only 10,000, again among the world's smallest.

The country is noted for being one of the three great phosphate islands in the Pacific, and extremely pure phosphate has been mined here since 1906. The phosphate is then used to make fertilizer, which is mainly shipped to Australia. Mining made Nauru one of the world's wealthiest countries, but mining has left most of the interior of the island ("topside") uninhab-

itable, as, after the phosphate is mined, the underlying surface of jagged coral pinnacles is exposed. The only inhabitable land is a narrow ring along the coast ("coconut land").

Naura from the Air

The deposits have nearly run out and mining continues at a small fraction of peak output and is expected to end in about a decade. An enormous trust fund, created from mining revenues and intended to provide for the country after the mining stops, has nearly disappeared due to corruption, mismanagement, and bad investments. The country today struggles to survive economically. Politically, the country is very unstable, having had five presidents so far this year alone.

Nauru is certainly a fascinating island and society. One day during my visit, the phosphate mine was paying each worker $100 of back wages, which were months behind. Grand public buildings were slowly decaying. Most of the cars were very expensive, but several years old, as no new ones had been purchased since the economy collapsed. Half-built buildings were all over the island. The country once had dozens of night clubs, bar and restaurants, of which only two bars and a handful of Chinese takeout places remained. The shops' shelves were empty, while the surviving restaurants had numerous items crossed off the menu due to a lack of ingredients.

Nauru has very limited development options. It has little usable land, and no money to pay for reclamation of mined areas. It has a very small workforce and is distant from major markets. The country does manage to sell a few postage stamps to collectors. Its main source of income today is from refugees, mostly Afghanis, that the Australian government pays Nauru to house. This generated 20-50 million dollars last year. This project has been very controversial in Australia, where there is concern about the treatment and well-being of the refugees. The camp is in the inhospitable interior of the country and is guarded by Australian Federal Police, so I could not look at it closely. Nauru is so afraid of negative publicity, and the resulting removal of the refugees and loss of income, that the country is virtually closed to foreign tourists. I was barely allowed in. The immigration authorities only allowed me into the country because of a miscommunication about visa requirements, the fact that the plane wasn't going back for three days, and by me swearing to the immigration authorities that I was not a journalist or human-rights activist.

Conveyor Belt in the Naura Mining Operation

Nauru is one of the most interesting places I have ever visited. Its problems, while severe, are similar in nature to many of its island neighbors. How does a small country, with limited resources, and a peripheral location, survive in the modern global economy? This question continues to be asked in the other Pacific states, most all of which are suffering from some sort of economic or political problems today.

Research in Java

By Andrew Wulff

Dr. Andrew Wulff recently returned from a field project in Central Java, Indonesia, as part of a multidisciplinary team investigating when early humans (Homo erectus) first reached Asia. The team focused on the fossil-rich sediments of the Solo Basin in central Java, and the nature of the physical environment at the time of human arrival, estimated to be about 1.5 million years ago.

Dr. Wulff worked with investigators from the University of Iowa and Indonesian researchers from the Institute of Technology and the Geological Research and Development Centre in Bandung, Indonesia, to apply new geological, paleoecological, and paleoanthropological research techniques to the earliest fossils of Homo erectus in the Solo basin of central Java.

The project seeks to generate a variety of data that will significantly increase the understanding of the physical environments that received the earliest humans, and to place these past environments in a detailed historical framework. Investigators also are focusing on ways to determine ambient climatic conditions and seasonal variations during the period of Homo erectus occupation.

Many of the human fossils have been found in two formations with well-preserved volcanic material. Dr. Wulff, a volcanologist, collected samples of this volcanic material, primarily ashfall and pumice, with the goal of matching them to specific eruptive events of several nearby volcanoes. He will be using the Scanning Electron Microscope at WKU, in addition to the Electron Microprobe at University of Kentucky, to determine specific mineral compositions, and will be using the X-Ray Fluorescence machine located in the Materials Characterization Center to analyze the nature of ash samples.

WKU Hosts *Karst 2003*: The International Conference on Karst Hydrogeology and Ecosystems

By Chris Groves

In June 2003, the Hoffman Environmental Research Institute, in conjunction with the Center for Cave and Karst Studies, Cave Research Foundation, and Mammoth Cave National Park, hosted *Karst2003*, the International Conference on Karst Hydrogeology and Ecosystems. The conference drew about 90 participants from 16 countries, including scientists from China, Russia, Ireland, Switzerland, Slovenia, Spain, France, and Hungary. Supported in part by United Nations funding, *Karst2003* was the primary meeting this year for the four premier international karst research groups, including UNESCO's International Geological Correlation Program, Project 448: Global Correlation of Karst Hydrogeology and Relevant Ecosystems, and the Karst Working Groups of the International Geographical Union, the International Association of Hydrogeologists, and the International Union of Speleology. The meeting proved a great success, even in the face of several timely challenges to organizing such a conference: the downturn of the global economy made funding travel difficult for many; new procedures associated with U.S. Homeland Security made visas more difficult or impossible for some to get; and, the worst blow—the 2003 SARS epidemic—resulted in only four of our Chinese col-

leagues being able to attend the meeting out of an originally planned contingent of 22.

The first day of the conference was filled with the annual business meetings of the four groups, with about 50 attendees who had an opportunity not only to participate in the workings of their own organization but to sit in on the others to see where there could be shared goals and resources. That, overall, represented the primary purpose of the meeting—to encourage communication among people with lots of ideas about where karst science should be heading, but who rarely get together at the same spot in person. Indeed, while we had a great variety of presentations during the meeting, much of the most valuable exchange of information took place between folks over a meal, a cold beer, or a stroll in the field.

Day two brought the first day of scientific sessions, with a plenary group at Van Meter Hall in the morning, and split sessions in the afternoon. These included two Biology/Ecology sessions, as well as others on Geology, Geochemistry/Sediments, Climate/Dating, and GIS/Mapping. Although a few holes in the schedule resulted from scheduled folks who were in the end unable to make the meeting due to the aforementioned travel problems, the time was filled with constant gabbing and chattering as those in attendance spoke with old friends, or made new ones. After a poster session at the Art Gallery in WKU's Fine Arts Center, the day ended with a party and dinner at the old dance club in the entrance of Lost River Cave that was hosted by Nick Crawford along with Friends of Lost River and the Center for Cave and Karst Studies. Giving the group a chance to see the results of the extensive renovation efforts in the Cave Nightclub, this event included a buffet sit-down dinner (it's not every day that one eats on white table cloths in a cave), underground boat rides, and more camaraderie.

Thursday, June 5, was a plenary field trip in, around, above, and below Mammoth Cave National Park. The trip started with a visit to Little Sinking Creek in the headwater areas of the karst system, which is typical of the numerous sinking streams that flow northwards across the Glasgow Upland and sink into the relatively pure limestone of the upper half of the St. Louis Limestone. A theme was also set for the day, which was for the group to be mindful of the late Jim Quinlan, for many years the Geologist for Mammoth Cave National Park. Jim and his colleagues (many of whom were in the field together on this day) laid the groundwork for understanding the regional hydrogeology of the cave area. Much of their work took place at the sites that were visited during the trip (including Little Sinking Creek), and many remembered having been with Jim on his field trips. Other than his hydrologic contributions, occasionally through the day stories and anecdotes from Jim's friends about his unique take on work and life kept the group entertained. The group traveled from there to the well-known Dripping Springs Escarpment overlook at the Park Mammoth resort, where several of the scientists who have made the most notable contributions to the study of karst at Mammoth Cave, including Will White, Jack Hess, and Ralph Ewers, described various aspects of regional hydrogeology. While generations of karst field trippers have hiked out to the overlook through the years, for this trip the group traveled in style on the resort's narrow-gauge railroad. After a brief stop in the Park at Echo River Spring, the group was treated to lunch (skillfully prepared by Pat Kambesis and a bevy of WKU geology students) at the Cave Research Foundation's Field Station and national headquarters at Hamilton Valley just east of the Park near Cave City. Then, of course, was a trip to Mammoth Cave through the Historic Tour Section and a side trip to the TB Huts. With the world's experts on the cave system conveniently on hand, excellent discussions of the cave were offered with a special treat in the form of a detailed, impromptu in-cave debate between Art Palmer and Will White on what recently improvements in the absolute

dating of the cave system's evolution means for the interpretations of cave-surface relationships.

The day ended with another great party, this one at the American Cave Conservation Association's headquarters at Hidden River Cave in the town of Horse Cave. Held in the large sinkhole at the entrance to the cave, through group shared another fine meal, this time Kentucky Barbecue, while being regaled by the eclectic bluegrass music (if one would consider Michael Jackson bluegrass tunes eclectic) of the band *Soulgrass*, including Dave Foster (ACCA's Executive Director) on the guitar and Debbie Heavers (ACCA's Associate Director) on the bass. The weather was perfect, especially with unusually cool and pleasant temperatures for June in Kentucky) and it was another great day.

The last day was filled with more presentations, this time in split morning sessions in Hydrogeology and Environmental Management, and an afternoon plenary session where participants heard about recent advances in karst work around the world, including projects in the US, the Slovak Republic, France, Ireland, Egypt, and Libya. Finally, the conference ended with a banquet at WKU's South Campus where most of the group said their farewells. Jack Hess, a longtime caver and hydrogeologist who did a Ph.D. thesis in the Mammoth Cave area some years ago, and who now serves as the Executive Director of the Geological Society of America, kindly gave the conference's final keynote address: *International Karst Science: Where Do We Go From Here?*

Despite a frantic week for the organizers who seemed to be rushing from one crisis to the next, the meeting overall went well and the conferences stated goal of increasing international communication was certainly achieved. Both prospects, and indeed challenges, for international karst research were revealed. In the end, most importantly, we hope that the new friendships and potential collaborations made between folks at the meeting will lead to a better understanding of karst science. And once everyone gets some rest, preparations for *Karst2007* will commence!

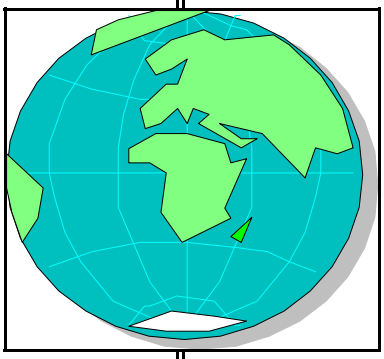
For more information on the conference, including abstracts of the scientific presentations, please see the meeting website at: http://karst.wku.edu/2003/.

The *Karst2003* Group

FACULTY ACTIVITIES

KATIE ALGEO has just completed her second year on the faculty of the Geography & Geology Department at Western. This year brought exciting developments in teaching, research, and service. She developed two new courses: GIS Analysis and Modeling, one of the core courses of the increasingly popular GIS Certificate program, and Cultural Geography, an upper-division course that examines such manifestations of culture as the built environment, symbolic landscapes, and representation of place in film, literature, photography, and music.

A new research program on the historical geography of tourism to Mammoth Cave has already yielded three conference presentations, one of which is scheduled to be published. Dr. Algeo was delighted to present work on links between tourism, economic development, and landscape change in the cave region at the British-American-Canadian Rural Geography Conference, held in Exeter and Plymouth, England, in July 2003. After the conference, she traveled to Betws-y-Coed, a stronghold of traditional Welsh culture and language in the northern part of Wales, and to the Lake District in northwest England, an early mass- tourism destination popularized by William Wordsworth and other Romantic poets. Dr. Algeo has just been selected to serve on the editorial board of *Southeastern Geographer* and continues to serve on the board of directors of the Rural Geography Specialty Group of the Association of American Geographers.



JOHN ALL writes that his first year with the Department has been an extremely busy one. He has taught all of the classes in the Environmental Planning and Management track and developed a number of new courses as well. Future courses include Environmental Ethics, Satellite Remote Sensing, and Global Environmental Change. He is teaching an Environmental Ethics class this semester for the Honors Program. John offered a summer workshop on Stormwater Management for Western students and for continuing education credit. He was an instructor for the Summer Camp for Academically Talented Junior High Students (SCATS). Finally, he taught a supervised internship course that allowed undergraduates to work on a real world research project as part of a research team. Four students presented research at the Sigma Xi Student Research Conference that they had developed in consultation with Dr. All.

John submitted external funding proposals on topics as diverse as Global Climate Change and Human Health; Global Climate Change and Pest Insects in the Northern Rocky States; Vegetative Change Detection, Management, and Climate Regime in Eastern Protected and Private Woodlands; and Residential Radon in Karst Regions. He also submitted several proposals for classroom infrastructure projects. In addition, John has been working with the Hoffman Institute and the Water Resources Center on sourcewater protection and on stormwater management.

John will have a chapter in the 100th Centennial American Association of Geographers Meeting Publication celebrating geographic research. His chapter is entitled *The Colorado River Delta of Mexico: 'Endangered' Species Refuge*'. Locally, John lectured at a Kentucky Rural Water Association Training Session, at the International Conference on Karst Hydrogeology and Ecosystems held at Western, and at the Kentucky Academy of Science annual meeting. Internationally, he traveled to China and made presentations at the Karst Dynamics Lab in Guilin, China Northwest Sci-Tech University for Agriculture and Forestry in Yangling, and at the International Symposium on Climate Change held in Beijing, China.

With Andrew Wulff, Dr. All launched the Human-Environment Linkages Program (HELP), which represents a new direction for the Department of Geography and Geology. HELP is not just a new research lab, although cutting-edge research will occur here. The Mission of HELP is to extend the benefits of research into the community by conducting research of local, national, and global significance and then disseminating that research to a

variety of outlets. Environmental issues commonly have both a scientific and a policy dimension and we hope to overcome the traditional failure to incorporate each in academic analysis. Coursework will focus upon small sessions of motivated students doing research on environmental issues. A key component of the courses will be dissemination of the findings by the students through presentations at local high schools and to other interested stakeholders.

We're offering students training in computer skills, mapping, synthesis of data, and presentation skills, all focused on research issues with "real-world" significance. This training and experience will be useful for students across their disciplines, improve retention, and will open career and graduate school opportunities.

John was elected Vice President of the Geography Section for the Kentucky Academy of Science and was a Guest Lecturer for the Sino-US Institutes for Soil and Water Conservation and Environmental Protection. As a new member of the University Senate, John was elected to the faculty welfare and Professional Development Committee, where he is pushing for better salaries, more realistic teaching loads, and better parking. John also helped in the creation of a new Graduate Geoscience Society to help enhance the *esprit de corps* for the graduate students.

Locally, he led teams of students who presented at Bowling Green area high schools on environmental research, he was interviewed on the radio for Earth Day, and was a science fair judge. During his free time he worked as a Red Cross Local Disaster Response Team Member to help prepare for natural disasters or terrorist attacks.
John has settled into Bowling Green and loves it. He and wife Sara are expecting their first child in October and they are setting deep roots into the community. They look forward to a long and productive life in Bowling Green and at Western.

KEVIN CARY completed his first year as a faculty member in the Department. Throughout the academic year, he taught Introduction to GIS and GIS Application Development, which are required for the GIS Certificate program. This year, he looks forward to expanding his list in GIS courses by teaching GIS Analysis & Modeling, along with that old gen. ed. favorite, World Regional Geography. He is currently working on advanced courses in GIS such as Internet mapping services and programming in GIS.

As the GIS Manager for the state-of-the-art GIS Facility, he is supervising GIS student workers on the campus-digitizing project. The first stage of the project is to digitize the subsurface features such as telephone wires and video cable for the Information Technology Department, which is funding the first stage of the project. The next stage will encompass digitizing features on the surface and creating a 3D model of campus for Facilities Management. Future projects for the GIS facility will include developing an Internet mapping service and hyper- linking the WKU building footprint features to the existing database of floor plans.

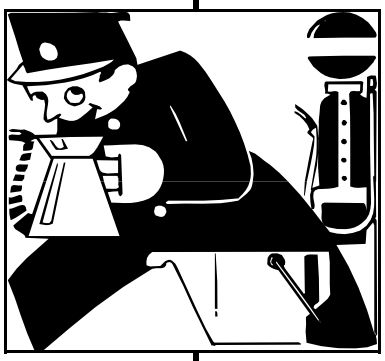
Over the summer, Kevin had the opportunity to give a presentation titled *A Project-Based Approach to Incorporating GIS into the Education Curriculum* at the ESRI Education User Conference in San Diego, California. At Kentucky's 2003 GIS Conference in Louisville, Kentucky, he participated as a panelist in a discussion on GIS Day and gave a presentation titled *GIS in Emergency Management: A Case Study of the Long Bay Fire in South Carolina*.

GLEN CONNER retired in July 2000 but has taught Aviation Meteorology each fall semester since then. He remains active in research and other professional and scholarly activities. In August 2002, he attended the American Association of State Climatologists meeting in Asheville, NC. In November, 2002, he attended the annual meeting of the Kentucky Academy of Science held at Northern Kentucky University. He presented a paper *Kentucky's Climate During the Civil War* and presented the same topic in January, 2003, in the Department's faculty/seminar series.

Glen attended the 83rd annual meeting of the

American Meteorological Society, convened in Long Beach, CA, in February 2003, and attended the AMS Chapters meeting. In March 2003, Glen attended the annual meeting of the American Association of Geographers held in New Orleans, LA. He presented a paper titled *The Weather Journal of Dr. Samuel D. Martin, 1852-1868*. Glen also co-authored a paper with Michael Trapasso and Keith Stallins titled *Computer Exercises in Meteorology,* presented at the same meeting by Michael.

In June 2003, he wrote a new product for the Kentucky Climate Center's website. With the help of Seth McDowell and Christina Henry, *Kentucky's Weather During the Civil War* is now on-line. It provides a narrative description of the weather conditions during each of sixteen military engagements in Kentucky during 1861-1865. He used data from the original observer records available in the Kentucky Climate Center. Of the ten Kentucky weather stations during that era, the station nearest the battle was used for the narratives. Read the story online at: http://kyclim.wku.edu/factsheets/civilwar/



Glen's article *Why Not Observer History?* has been accepted for publication in the premier edition of the *Station History Newsletter,* expected in September 2003. The article describes the use of census information to construct biographies of weather observers from the nineteenth century.

NICK CRAWFORD enjoyed a sabbatical during the Spring 2003 semester and continues working on karst– and water-related issues in the Center for Cave and Karst Studies.

RICHARD DEAL is beginning his third year at Western Kentucky. This past year he taught several sections of Human Geography and the perennial student favorite, Data Analysis and Interpretation. He taught one class for the first time, Political Geography. As usual, many slides were shown, including a number of ones taken at an anti-globalization protest in London, England.

His research continues to focus on efforts to establish elected regional governments in England. He presented a paper at the Association of American Geographers Annual Meeting in New Orleans titled *English Devolution: A Solution in Search of a Problem?* The British Government has recently announced plans to hold referenda in England, so after five years of study there may actually be something on the ground to examine in the next few years.

He also wrote questions for the World Geography Bowl, a geography knowledge contest for students held at the Southeastern Division of the Association of American Geographers meeting each fall. He hopes to get some Western students to compete this year. They should do well, since he tends to write questions about places and things he likes. "If they pay attention to my ramblings in class about England, beer, and the Pacific, they should be able to answer half my questions."

His summer was supposed to be spent in China, but this trip was canceled due to SARS. This trip has tentatively been rescheduled for next summer. Instead, he returned to the South Pacific to visit Tonga and Samoa. He also went to Niue, Kiribati, and Nauru for the first time (see story on p. 8). Richard likes visiting unusual places, as very few people actually visit these three countries. Only twelve people got off the plane in Niue, while Nauru doesn't currently allow tourists. (He managed to convince the immigration officials to let him in the country.) While the three islands are very small, they are all quite interesting. Niue, a very scenic limestone island with many caves, suffers from a declining population, now 1500, due to lack of economic opportunities. Kiribati has severe environmental problems, due to an extremely high population density and a lack of fresh water. Nauru has a variety of environmental, economic, and political problems, which are discussed in the article on page 8 of this issue. Dr. Deal very much enjoyed hiking and walked around Nauru each afternoon. (It is the world's smallest republic!) Now that he has achieved a long-time goal of visiting Nauru, he vows to visit Tokelau, an island so isolated, it has

no airport and is visited by ship only once a month.

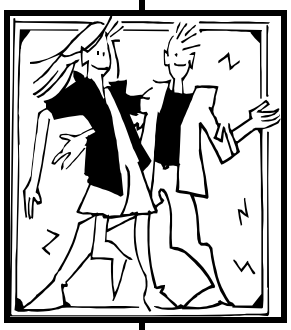
SCOTT DOBLER has completed his third year at Western Kentucky University. This past year he presented a paper at the Kentucky Academy of Science that addressed the incorporation of subtropical cyclones into a thematic unit for Kentucky P-12 schools. This paper is the second in a series that discusses geoscientific issues influencing the state of Kentucky. The first paper isolated orographic precipitation related to Pine Mt., Kentucky. Scott's continuing research interests will address how Kentucky college and university geoscience programs are preparing P-12 students for the future.

A number of geoscience faculty members have helped Scott develop a series of one-hour classes that address natural hazards. Among the topics are: earthquakes and volcanoes, tornadoes, floods and droughts, and hurricanes. These classes were designed with three goals in mind:

· To provide additional opportunities for P-12 teachers to increase content knowledge;

· To provide the general public an opportunity to learn about various geohazards in an academic environment;

· To use as a tool to recruit potential students into one of our geoscience programs



In May 2003, Scott teamed up with Debbie Kreitzer to organize a field trip to the Southwest U. S. You can read more about this on pp. 9-10 of this issue.

STUART FOSTER continues to serve as the State Climatologist and director of the Kentucky Climate Center. He attended the annual meeting of the American Association of State Climatologists in Asheville, North Carolina, and the Midwestern State Climatologists meeting in Champaign, Illinois. He presented an update on the Kentucky Climate Center's GeoProfiles Initiative at the Kentucky Academy of Science Meeting in Highland Heights, Kentucky. At the local level, he has been active in the Southern Kentucky GIS Users Group.

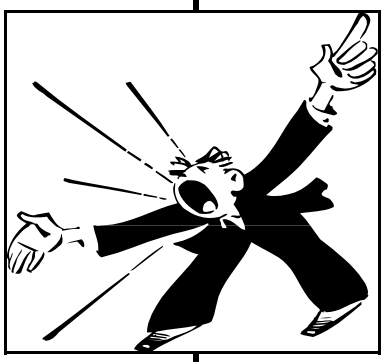
As a result of Dr. Foster's efforts, in conjunction with officials at Mammoth Cave National Park, the National Atmospheric and Oceanic Administration (NOAA) will be installing a climate observation station as part of the U.S. Climate Reference Network just outside the park. This station will play an important role in efforts to develop a long-term, high-quality record of temperature and precipitation to support research and policy regarding climate change and variability.

CHRIS GROVES had, overall, a fun and productive year. Outside of the classroom, probably the most significant activity has been the continually accelerating evolution of the Hoffman Institute's environmental research program in southwest China. Collaborative geochemical and hydrologic research between the Hoffman Institute and the Institute of Karst Geology in Guilin continues at a spectacular tower karst site near Yaji in Guangxi Province, where Chris and Mammoth Cave Hydrologist Joe Meiman installed automated monitoring equipment during two trips to China in 2002. The first peer-reviewed paper from the project, "Controls on South China Karst Aquifer Storm-Scale Hydrochemistry," will appear soon in a special issue of the journal *Ground Water* devoted to hydrologic research in China.

The other related development has been the establishment of a consortium to develop a center for the study of Environmental Health in China between the Hoffman Institute, the US Geological Survey, and the Armed Forces Institute of Pathology. Chris made seven trips to Washington DC during the year to help design the project, and consortium members are currently waiting with their fingers crossed to hear about potential major funding from the US Agency for International Development. During this time Chris became a member of the China Environmental Forum at the Woodrow Wilson International Center for Scholars in Washington, where he and his colleagues gave a seminar *Natural Geologic Conditions, Environmental Challenges, and Human Health in Southwest China* in December. In other Asian work, Chris is working with Belgian and

Vietnamese colleagues as a member of the Scientific Advisory Committee to help organize the "International Transdisciplinary Conference on Development and Conservation of Karst Regions" to be convened in Hanoi, Vietnam, in 2004, and where Chris will give an invited keynote lecture *Prospects and Challenges for Asian-American Cooperation in Karst Resource Research and Protection*.

Another exciting collaboration moved forward this year between the Hoffman Institute and scientists at Tongass National Forest in southeastern Alaska, where remote, spectacular karst areas are being explored to reveal cave systems that have great significance as headwater areas for key salmon fisheries, as well as containing important archeological and paleontological remains. Hoffman Institute graduate student Bill Curry finished a thesis this year from work there, where he measured cave sedimentation rates using radioactive cesium remaining in the environment from open-air testing of hydrogen bombs as a tracer. Chris spent a week in the Alaskan field (both above and below ground) in March with USFS geologist Jim Baichtal, where they made plans for collaborative research and worked out the details of a cooperative agreement between the Forest Service and WKU. This should lead to great student opportunities in this wonderful landscape, which among other things contains some of the largest remaining stands of old-growth timber left in North America.



A bittersweet note for the Institute was that Alan Glennon, who for several years has served as the Hoffman Institute's Assistant Director, was accepted into the Ph.D. program in the Geography Department at the University of California at Santa Barbara, a highly-ranked program where Alan will continue his research into the development of Geographic Information Systems technology. We all appreciate very much that Alan was the founder and primary moving force of the Institute's GIS program and wish him well. Graduate student Rhonda Pfaff also completed her thesis this spring, and began a great position, also in California, developing GIS software at ESRI, the premier GIS software producer.

For the fourth year, Chris and Deana spent several months during the summer at the University of Hawaii. where Deana happily completed a Master's Degree in Information and Library Science, and where Chris continued to work on his Chinese reading and writing skills in between keeping up with WKU grant and other responsibilities by email. Also happily, upon returning to WKU three days after graduation, Deana began her new faculty position in WKU's library system as the Cataloger for the University's Educational Resource Library.

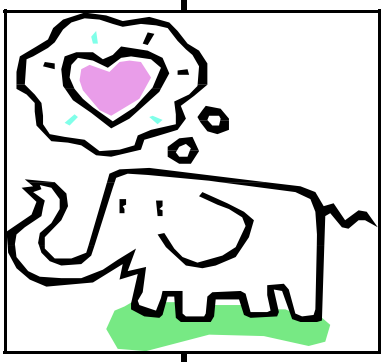
DAVID J. KEELING reports that his tenth year in the Department brought challenges, excitement, and great students, with several productive research trips, many fun classes, informative conferences, and hard-working students to keep him hopping.

Travel remains an important part of Dr. Keeling's 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 July, 2002, Dr. Keeling (along with Debbie Kreitzer) headed for the Southern Hemisphere with 20 students on the first Geography and Geology Study Abroad program of the 21st century. The program spent eight days in Cairns, Australia, a week in the Northern Territory camping in Kakadu National Park and environs, and eight days in Sydney, visiting the Blue Mountains, Canberra, the wine country, and the city beaches (see the summary report in last year's GEOGRAM at http://www.wku.edu/geoweb/info/geogram02.htm#c).

In November, 2002, Dr. Keeling headed south once again, this time to the Chilean fjords for a series of lectures on an American Geographical Society educational tour. The 10-day journey visited Santiago, the Chilean Fjords, Cape Horn, and the Falkland Islands. After the end of the Fall semester, David headed across the Atlantic to London and Manchester, England, to continue

research on transport development issues in rural Wales. In early January, Dr. Keeling headed to Tucson for the Conference of Latin Americanist Geographers meeting and participated in a field trip that visited the small Mexican border town of Sasabe. A few days after returning from Arizona, Dr. Keeling headed across the Atlantic again for a quick visit to London before continuing on across Asia to New Zealand.

Spring Break saw Dr. Keeling flying back across the Atlantic, this time to Stuttgart, from where he drove into the Burgundy region of southeastern France for a week of research on transport, economic development, and social change in rural communities. In late May, David took his fourth trip across the Atlantic, this time heading to Budapest for the beginning of a 10-day educational tour of Central and Southern European cities sponsored by the American Geographical Society. During the tour, he lectured on European city types, the changing European Union, and the role that Seville and southern Spain played in the development of the "New World." In between all of the international trips, Dr. Keeling managed several flying visits to New York, New Orleans, San Diego, Salt Lake City, Washington DC, and Sioux Falls for a variety of meetings, conferences, and personal activities.



David participated in several conferences and workshops during the year. In October, 2002, he gave a paper titled *Argentina after the Collapse* at the annual meeting of the Midwest Association of Latin American Studies convened in Nashville. In December, Dr. Keeling joined Chris Groves at a forum on southwest China convened by the Woodrow Wilson Center in Washington DC. At the Latin Americanist Geographers conference in Tucson, he presented *Globalization's Challenge for Latin America in the 21st Century*, and in February he attended a workshop for Academic Chairs in San Diego. In New Orleans, he presented *Geography Rocks! Place, Culture, and Popular Music* at the annual conference of the Association of American Geographers, drawing on the first chapter of his book project currently underway. He closed out the year with an AGS-sponsored workshop at the USGS EROS Data Center in Sioux Falls, South Dakota.

Within the community and on campus, Dr. Keeling gave several talks on issues ranging from Argentina's economic development to democracy in Iraq. He appeared several times on WKYU-FM's Midday Edition, gave talks at the Universalist Unitarian Church, Barnes and Noble, and at various schools, 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 development of the Leadership Studies Committee (creating its website at www.wku.edu/leadership) and to the International Education Council (creating its website at www.wku.edu/iec). Department Head duties have severely restricted his ability to write and publish research, but during the past year Dr. Keeling served as co-editor for the new *Journal of Latin American Geography* and made some progress on his book *Geography Rocks!,* a geographical analysis of the development and change of popular music in American society.

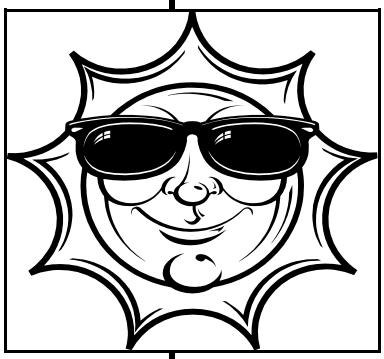
As always, Dr Keeling encourages past, present, and potential students to come by and share travel stories, information, and geographic tidbits. He can be reached easily in cyberspace at: david.keeling@wku.edu or by phone at (270) 745-4555. Also, visit Dr Keeling's homepage on the World Wide Web— just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

DEBRA KREITZER spent a very productive year teaching, researching, taking classes, and planning new geographical experiences. She presented a paper at the Kentucky Academy of Science conference at Northern Kentucky University titled *The Heritage Corridor: Local Endeavors, Global Implications,* coauthored with James Bingham and Stuart Foster. She also presented a poster along with two geography students, Laurie A. Myjak and Jamie A. Lancaster, titled *Globalization Trends in Kentucky's Heritage Corridor* at the New Orleans

meeting of the Association of American Geographers (AAG).

Debbie also completed the department's GIS Certificate Program and is now teaching a GIS class. The classes were challenging and full of new technologies, theories, and applications. On top of the knowledge she received in these classes, Debbie says that this experience reminded her of the some of the challenges faced by the students she teaches.

Debbie is still the advisor to the growing Geography Club. During the past year the Geography Club was involved in some fundraisers and (with the help of Scott Dobler and Katie Algeo) a field trip to the AAG meeting in New Orleans, Louisiana. Students attended meetings at the conference, presented posters, and learned more about their discipline. They also learned about the culture and history of New Orleans by taking a tour of the city, dining in fine restaurants, and observing the nightlife. During the coming academic year, the Geography Club plans on participating in many more educational and fun activities.



In May, Debbie and Scott Dobler drove eight students to the southwestern United States as part of a geography field camp. Many of the students had never traveled west of the Mississippi river. The students, who studied either physical or human geography, enjoyed learning geographical principles through observation and experience rather than in the classroom.

KENNETH KUEHN writes that the 2002-03 academic year went by in blur and it doesn't look like this year will be any different! Last November, Dr May and Ken finished an exhausting election season in their bids to become City Commissioners of Bowling Green. When the ballots were counted they were not among the winners, but all four of the challengers in the race did very well. It was a great experience to make media appearances, record radio commercials, and get their message of 'sustainable development' out to the voting public. This fall, their exciting, true story of civic engagement appeared in a feature article in the *Western Scholar* magazine and should be available soon in an on-line version (http://www.wku.edu/Dept/Support/AcadAffairs/Magazine).

Last September, Dr Kuehn attended the Kentucky Society of Professional Geologists (KSPG) Annual Meeting and Field Conference during which attendees examined the oldest rocks exposed in Kentucky and held a special celebration to designate Camp Nelson as their second "Distinguished Geologic Site." This September, Ken and former student Keith Milam will co-lead the Field Conference and designate Middlesboro, Kentucky, as a third Distinguished Geologic Site. As many of our alumni know, the town of Middlesboro has developed in an 'astrobleme' or ancient meteorite impact structure.

Last October, Dr. May and Ken traveled to Denver to attend the national meeting of the Geological Society of America to present a paper on the proposed Kentucky TriModal Transpark. Though the meeting was quite busy, they took some time for hiking among the flatirons in the foothills of the Rockies and to visit the famous track site known as "Dinosaur Ridge." In November 2003, they will travel to Seattle for the GSA meeting to present a new paper on this controversial transpark development project.

March, 2003, brought three students and Dr. Kuehn to a meeting in Kansas City. Graduate student Joey Islas and Ken presented a paper on an interesting structural feature found at depth here in Warren County. The meeting included a field trip through Missouri to Oklahoma to observe some of the unfortunate environmental effects of mining in this world famous lead-zinc deposit. In April, Drs Kuehn and Wulff led the annual 800-mile structure/petrology field trip into the southern Appalachians of Tennessee and North Carolina for about twenty students.

In May 2003, Ken completed his two-year tour in the Dean's office and contributed to several College-wide initiatives during the year. Among them, he developed a recruitment strategy for the College and prepared a revision of Ogden's new strategic plan. This year, Ken will begin an interesting new adventure as Faculty Associate in the University's Center for Teaching and Learning.

For his teaching, Dr Kuehn continued with introductory geology courses and Structural Geology for geology majors and minors this past year. As Ken

concludes, "So, that was my year…how was yours? I am always glad to hear from my former students." Give Ken a call (270-745-3082) or send an email (Kenneth.Kuehn@wku.edu) some time and let him know how you are doing.

REZAUL MAHMOOD writes that it was a productive year. Teaching and research activities kept him quite busy. He continued to teach meteorology, weather forecasting and analysis, and physical climatology during the 2002-2003 academic year. Much of his research time was occupied with soil moisture modeling. He has also launched research activities in Monsoon dynamics and Appalachian flooding. Rezaul published results of his research in several peer-reviewed journals, including *The Professional Geographer, Agronomy Journal,* and *Monthly Weather Review*.

As in the past, Rezaul was also involved in several multi-departmental and multi-institutional grant writing activities for extramural funding to support research here at WKU. Some of his research activities were funded ($5,000) by the WKU Faculty Research Council. He also received funding ($13,000) to establish a high-density rain-gauge network in and around the Mammoth Cave National Park to measure mid-latitude rainfall variability at multi-temporal and spatial scales. These data will also be used to enhance classroom activities. In addition, Rezaul and Dr. Trapasso received new funding ($25,000) to upgrade and expand the meteorological lab and its computing facilities. This upgrade significantly improved the Department's teaching and research capabilities in climatology and meteorology.

Rezaul traveled to Richmond, VA, for the annual SEDAAG conference and to New Orleans, LA, for the AAG annual meeting. He organized a special session in hydroclimatology, chaired this session, and also presented research papers. He also attended the annual meeting of the Association of American State Climatologists (AASC) convened in Asheville, NC. Rezaul traveled to the University of Oklahoma to participate in the Oklahoma Meso-net Working Group Meeting. In addition, he visited the National Science Foundation in Washington, DC, to explore funding opportunities for his future research.

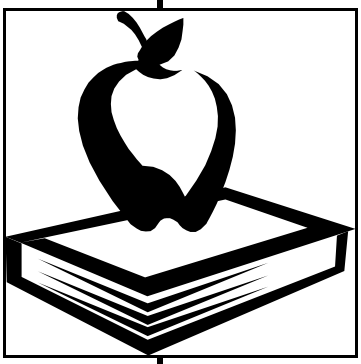
MICHAEL MAY has completed his seventh year as a geology faculty member in the Department. He continued his public-service duties as a member of the Bowling Green/Warren County Storm Water Advisory Committee, and he has continued testifying at planning and zoning hearings associated with the Kentucky Trimodal Transpark (KTT) because of his concerns that environmental issues and cultural resources have not been adequately addressed. It is feared that this proposed industrial facility to be nestled between two designated Kentucky Scenic Byways (US 31-W and HWY 68-80) will not be in harmony with the idea of a scenic byway and, in fact, this area is now listed as an endangered historical area by Commonwealth historic preservationists.

Over the past year, Dr. May was a member of one of Kentucky's Brownfields Task Force to complement the Governor's own Task Force. Brownfields, to those who may not be familiar with them, are vacated, environmentally contaminated lands usually associated with old industrial properties in urban areas. The role of the task force was to rewrite the regulations and operating procedures for Kentucky's Brownfield areas so that these lands could be cleaned up and put back on the tax rolls. Prior to the Task Force being assembled, the state legislature unfortunately did not understand the clean-up standards that Kentucky needed in order to be successful and competitive with adjacent states who are well ahead of Kentucky in recycling urban lands. The Brownfields project cultivated interaction between the Kentucky Environmental Cabinet, the city of Louisville, WKU, U. of L., UK, the Kentucky League of Cities, the Kentucky Resources Council, the Agricultural and Environmental Subcommittee of the State Legislature, as well as various toxicologists, geologists, environmental engineers, health professionals, and biologists. Redeveloping Brownfields is a valuable anti-sprawl tool as it forces development responsibly toward urban centers and renews them, as opposed to encouraging development of green fields in suburban or rural areas.

Additional public service for Mike has included presenting local schools, civic groups, and churches

with field trips and lectures related to geology and environmental issues. Dr. May also continues to get the Department's name out on local radio shows, TV, and in newspapers and even in Western's own publications such as the *Western Scholar* (for an article on Mike and Dr. Kuehn please see: http://www.wku.edu/Dept/Support/AcadAffairs/Magazine. In particular, over the last year, he has supplied the media with much information in regard to earthquake safety and the causes of several earthquakes that occurred in the region such as ones in northern Alabama, the New Madrid Fault Zone, and in the Wabash Valley Fault Zone.

In the classroom, Mike only taught in Fall 2002 as he was on sabbatical leave this past spring, but he continues to teach intro geology, physical geology, stratigraphy, and environmental geology. He took a break from being an adjunct faculty member for the University of North Carolina, Chapel Hill, this past summer (on the tailend of his spring sabbatical) but anticipates once again teaching the UNC environmental regulations short course in Norfolk, Virginia, or perhaps in Florida, as has become customary.



Several meetings and field conferences were on the schedule for Mike this past year. Along with Dr. Kuehn, he enjoyed the annual Field Conference of the Kentucky Society of Professional Geologists (KSPG) in September 2002 in the Camp Nelson area and at the Perryville Battlefield in the Bluegrass region of Kentucky. This trip also included an evening cruise on the *Dixie Bell* from Shaker Landing on the Kentucky River to witness the Kentucky River Palisades with their wonderful Ordovician outcrops. The KSPG Conference proved quite enjoyable as the geomorphology and karst landscape evolution were studied and placed in the context of the Battle of Perryville. During this Civil War battle, the Inner Bluegrass karst landscape confused troops and apparently resulted in relatively high casualties for both the Union and the Rebel armies. Nearby Camp Nelson was designated a "Distinguished Geologic Site" by KSPG because of its well-exposed Kentucky River faults, stratigraphy and geologic conditions that aided the Camp in being well-protected from enemy forces. In October 2002, Mike, along with co-author Ken Kuehn, presented in an environmental geoscience session at the national Geological Society of America (GSA) convention in Denver, Colorado, a poster entitled *The Kentucky Trimodal Transpark: A Mammoth Problem* (for abstract see: http://gsa.confex.com/gsa/2002AM/finalprogram/abstract_45660.htm) .

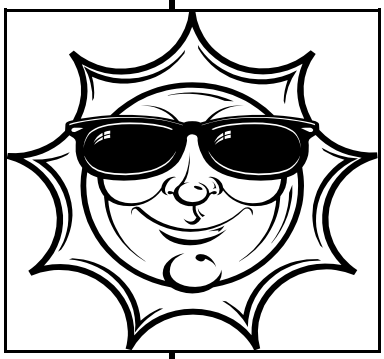
In November 2002, Dr. May, along with other colleagues in Geography & Geology and students, attended the Kentucky Academy of Science (KAS) at Northern Kentucky University. He and Dr. Siewers chaired and conducted business for this meeting. Immediately following the KAS meeting in early November, Dr. May traveled to Carter Caves State Park and presented a talk on Geohazards in the Commonwealth for the annual meeting of the Kentucky (Cumberland Chapter) Sierra Club.

During Spring 2003, Dr. May stepped out of the classroom and enjoyed a sabbatical leave that was packed with lots of activities. In March, he participated in a textbook kick-off workshop at the American Geological Institute's (AGI) national headquarters in Alexandria, Virginia, working with about a dozen other geologists from across the country on developing a new textbook to engage non-major students. Prentice Hall, the AGI, and the National Association of Geology Teachers (NAGT) are all cooperating on getting this book on Environmental Geology published within a year. During the sabbatical period, Dr. May mostly worked on petrographic aspects of limestone replacement by iron-rich clays, or what he dubs the *terra rossa* project. Thanks to the efforts of Dr. Wulff, Dr. May was able to take advantage of a new digital camera set-up to take photomicrographs on a departmental microscope for the terra rossa project. This set-up provided high-quality photos necessary for showing early transformation of lime-stone to terra rossa. Dr. May worked closely with Dr. Enrique Merino at Indiana University during his sabbatical leave on this project and quite enjoyed traveling to Bloomington to work.

Mike and his wife Beth, and sons Peter (10), and Kevin (8), continued with various sports activities for the year and enjoyed a spring break trip to the San

Francisco area and Yosemite National Park and the surrounding glaciated Sierra Nevada and the famous Mariposa Grove of giant Sequoias. The Mays also spent a couple of weeks in Colorado in July, with a highlight collecting granites above 14,000 feet and observing great alpine-glaciated areas replete with tundra meadows. The boys are just about outrunning their Dad now, with Peter clipping off miles at a 5:30 pace and both of them run close to 9:00 for a mile and a quarter. Just don't peak too early guys, college scholarships aren't passed out to too many 5th graders!

FRED SIEWERS' enjoyed another productive year at Western Kentucky University. He offered courses in Introductory Geology, Historical Geology, Stratigraphy, and Sedimentology. As in years past, Sedimentology was very much a project-based course. Nine students conducted independent research projects. Those projects ranged from local field investigations of the Girkin and Ste. Genevieve Limestones, geode formation in the Fort Payne and Salem-Warsaw Limestones, to laboratory investigations (including electron microscopy) of ooids from the Great Salt Lake and Bahamas. These projects were as much exercises in time management and project planning as they were research and writing experiences, as students had to develop their own deadlines and point distributions. Judging by the professional quality of their completed projects, the projects and course were a resounding success!



Dr. Siewers also successfully offered an on-line, graduate level course in Earth System Science for Kentucky teachers. The course, designed by NASA education specialists and funded by a grant from the Institute for Global Environmental Strategies and NASA, introduced teachers to the interconnections of the Earth System. Teachers examined tropical deforestation, coral reef destruction, ozone depletion and global environmental change – all from an Earth System Science perspective. Knowledge about these environmental problems was obtained through individual research and group work, all of which was conducted and facilitated on-line by Dr. Siewers. Throughout the course, students used problem-based learning techniques for their own research and for the lesson plans they constructed for their classes. Judging from the evaluations of the course, a lot of learning about Earth System Science occurred. This course will be offered again during the Spring 2004 semester. Any person interested in taking the course should contact Dr. Siewers at fred.siewers@wku.edu or 270-745-5988.

In addition to these instructional activities, Dr. Siewers was very involved in the Geology Section of the Kentucky Academy of Science and the WKU Chapter of Sigma Xi. Dr. Siewers served as President of both of these organizations during the 2002-2003 academic year. His principal activity for both organizations was to organize research conferences; specifically, the Geology Section meeting of the KAS, held at Northern Kentucky University, and the Annual WKU Student Research Conference held at WKU's South Campus. As any recent graduate of the Department knows, Geography and Geology is always well represented at the Student Research conference. This year was no exception, with six oral presentations in geology, geography, and geoscience, including a best-of-session geology presentation by senior Mollie Laird for her work with geologist Andrew Wulff.

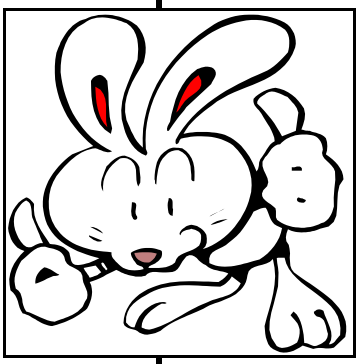
Dr. Siewers has been active in carbonates research as well as in geoscience education. Several major projects are nearing fruition and will be wrapped up during upcoming year. As always, Dr. Siewers loves to hear from past students and alumni. Send him some e-mail, or better yet, stop on by. His door is always open!

L. MICHAEL TRAPASSO tends to his usual duties in the Department. He still teaches the introductory physical geography and meteorology courses. But he shares the upper-level and graduate-level atmospheric science courses with his colleague Rezaul Mahmood. His role as the administrator for the Meteorology Computer Laboratory keeps him busy during office hours, and his duties at the College Heights Weather Station keep him hopping as well. Trapasso is consistently utilized as a thesis committee member for Master's candidates in the physical

aspects of Geoscience. So, in all, he remains an integral part of the Department and its functions.

Furthermore, on a professional note, this has been a record year for Michael. After a year and a half of work, his new textbook has just been released, the *Essentials of Physical Geography* by Robert E. Gabler, James F. Petersen and L. Michael Trapasso (Brooks-Cole Division of Thomson Publishing). Both Michael and colleague Nick Crawford will use this textbook for four sections of GEOG 100 (Introduction to the Physical Environment) this fall semester. Everyone certainly wishes Michael luck with adoptions and sales nationwide and in Canada.

While working on this textbook, Trapasso also managed to write several entries for the new *Encyclopedia of World Climates* (Kluwer Publishing). That volume will be coming out next year.



Last March, Michael and co-authors Glen Conner and Keith Stallins presented a talk at the Association of American Geographers annual meeting in New Orleans. Their presentation titled "Computer Exercises in Meteorology" explained and summarized the procedure by which the three developed the meteorology computer labs used for GEOG 121. The talk was so well received that Michael was asked to submit a written version of that presentation for publication in the on-line database called ERIC/ ChESS (Clearinghouse for Social Studies and Social Science Education). That task has been completed and this work is now on-line for use by educators nationwide.

Sometime during the spring, a colleague from New Zealand, wanting to edit a book titled *Tourism and Climatic Change*, approached Trapasso about contributing a chapter. Having heard about Michael's work in the Antarctic, he asked if Trapasso would write something concerning tourism in the 'land of the ozone hole'. Michael agreed and submitted his manuscript, which will comprise Chapter 16 in this book, scheduled to come out in 2004.

If that wasn't enough, in May the publishers of *Kentucky's Civil War 1861-1865*, Volume II, asked him to write an article about Bowling Green during the Civil War. In only two weeks, he sent them a manuscript, which has since been published. It appears that Trapasso's status as one of Bowling Green's Civil War Historians still holds true.

On the travel front, Michael has been to another couple of out-of-the-way places this year. In January he headed out to Iceland. The island lies on the Mid-Atlantic Rift Zone (warm ground) and within the path of the North Atlantic Drift (warm ocean current), so the weather there was not as wintry as one might have thought. He managed to take some great photos and has already written and lectured about his trip to the land of the Vikings. Glaciers, geysers, volcanoes (active and not), fabulous waterfalls, and the aurora borealis: it was a geoscientist's dream. All that, and a history that goes back over 1300 years! The Vikings seem to have grabbed Michael's interest. In the near future he plans to travel to Greenland and then to Newfound-land in order to trace the Vikings' voyages to North America (ca. 1000c.e.). There is no doubt he will follow up on this new theme.

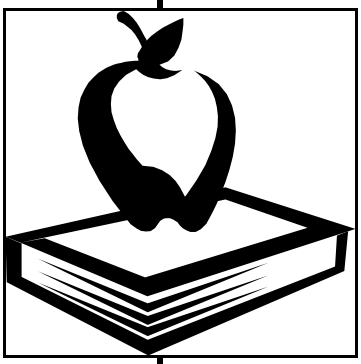
This past June, he took his usual trip to Montana and Wyoming to meet with friends, explore, and do some Indian Wars re-enacting. His travels took him back to Yellowstone and the Grand Tetons National Parks. He also took some time to follow in the footsteps of William F. "Buffalo Bill" Cody, as well as Butch Cassidy and the Sundance Kid. Needless to say, he and his friends had a great time.

His big adventure of the summer took place in the Bolivian and Peruvian Andes. He went there to do some "Indiana Jonesing-Around," as he calls it. His major theme was to visit the pre-Inca Civilizations like the Tiwanaku, and the Aymaras. These cultures had established fabulous ceremonial cities long before the Incas conquered them all. He was fascinated by all the history. In addition there was great physical geography and geology everywhere! He visited silver mines in the city of Potosí, the great Salt Flats (about 4000 square miles worth) near Uyuni, extinct volcanoes, and beautiful snow-capped mountains – not to mention exploring around the beautiful and sacred Lake Titicaca. He even visited the site of a train robbery by none other than Butch Cassidy and the Sundance Kid (recall they were eventually caught and killed in Bolivia). High-altitude climbing was a

bit hard, though. He said, "It's easy to climb 4 or 5 flights of stairs in Bowling Green (at 500-600 feet above sea level), but when you are starting at 12,500 feet above sea level, you tend to slow down a bit."

As mentioned earlier, Michael is still considered a local Civil War Historian, but people also know him as a Civil War re-enactor as well. Though he doesn't attend as many events as he used to, he still rides with the 6th and 7th Tennessee Cavalries, and tries to get out when he can. His last event was mid-May at the Battle of Sacramento, Kentucky, in McLean County. He had a great time, and several WKU faculty and students were there to witness the event.

In summary, it's been a good year for Michael Trapasso. There were several significant professional accomplishments, as well as some adventurous travel. He works hard, plays hard, and, as always, he looks forward to hearing from alumni.



ANDREW WULFF has had a busy, but productive, first year anchoring the "hard-rock" side of the Department. He authored or co-authored eight grant proposals, five of which were funded very closely to levels requested. He redesigned eight labs for the Physical Geology (GEOL 113) course, submitted one manuscript for publication and has four others in various stages of preparation. One student (Mollie Laird) won Best Paper Award at the Sigma Xi conference in April for her talk on *Geochemistry and Petrogenesis of Lavas from the Casitas Shield, Volcan Cerro Azul, Southern Volcanic Zone, Chile*, and another (Jessica Campbell) won an honorable mention for her work *Characterization Of A Li-Rich Pegmatite From The Keystone District, Black Hills Region, South Dakota*.

Dr. Wulff was also able to purchase a state-of-the art IXRF-EDS system for the SEM housed in the Biology Department. This system dramatically extends the research/analytical capabilities of the machine and makes it far more useful for routine analysis of earth materials. Several undergraduate students have already used it over the summer of 2003 and are quite excited about its possibilities. He also purchased USGS silicate standards in order to set up calibrations for silicate materials on the XRF housed in the Materials Characterization Center. These standards will make possible the analysis of earth materials that could not be analyzed accurately before on this machine.

Dr. Wulff was named Director of the Wasatch-Uinta Field Geology Course. This has been one of the premier field-geology courses in the country since its inception 38 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. Many of the smaller field courses watch the Wasatch-Uinta course closely for leadership in field-mapping training. WKU students may now attend the field course, which makes available to the students un-paralleled field geology training, in addition to affording them the oppor-tunity to be working with professors from these major universities, opening doors to exceptional graduate programs. This also provides an excellent forum for evaluating the training that WKU Geology majors are receiving, and placing WKU students among the best in the country. The field camp also provides an opportunity for other members of the Department to join the faculty for a time during the summer, granting opportunities for "networking" and possible collaborations with faculty from these larger research universities. The Department is potentially turning an important corner in terms of the quality of opportunities offered and the nature of the research that faculty members are doing. The exposure given to our students and faculty certainly is extraordinary for a university such as WKU.

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ALUMNI CONTRIBUTIONS

Contributions to the Department of Geography and Geology Development Fund in 2002-2003 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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Ross W. Workman
John T. Yewell
Mr/Mrs Michael Zimny
Gregory Zoeller

ALUMNI NEWS

David N. Alexander (Geography 1976) has retired at the rank of Lieutenant-Colonel after serving 20 years in the U.S. Army and Army Reserve. He now teaches 7th grade geography at Ramsey Jr. High in Ft. Smith, Arkansas.

Nicole Bennett Banks (Geography 1999) works for West Point Bank in Flaherty, Kentucky, and is happy to announce, along with husband Lenny, the birth of their son, Anthony "Ben" in October, 2002.

Shawn Crowe (Geography 2001) works for the Kentucky Higher Education Assistance Authority in Frankfort, Kentucky

Ramey Allen Douglas (Geography 1999) taught for three years at Bate Middle School, Danville, Kentucky, and then moved to Austin, Texas, in July 2002. He hopes to enroll in the Masters program at either UT-Austin or Southwest Texas State. Ramey writes that the "beautiful geographical/physical features of the 'Hill Country' are great for hiking & camping, and abounds with awesome limestone

caverns.

Joshua D. Durkee (Geography 2000) is currently a graduate student at the University of Georgia, where he served as a teaching assistant for the meteorology lab. Josh also worked as a research assistant using AVHRR data to monitor Georgia's drought conditions. His thesis involves an investigation of mesoscale convective complexes. Joshua married Rebecca Lenz in April, 2001.

Carlos B. Embry, Jr. (Geography 1963) was elected State Representative for the 17th District of Kentucky in the November election. He represents Butler, Grayson, and western Hardin counties in Frankfort. This win marked Carlos' fifth election victory. Earlier Carlos served three terms as Ohio County Judge-Executive and a term as Mayor of the City of Beaver Dam. Carlos is retired from the law firm of Hughes and Coleman, where he served as General Manager.

Jason Finley (Geography BS, 1994, MS 1996) serves in the Colorado Army National Guard. Jason is a 1LT, Environmental Science Officer, with the 8th Weapons of Mass Destruction Civil Support Team, in Aurora, Colorado. Jason and his wife Krista are the proud parents of a baby girl, Ann Marie, who was born on October 4, 2002.

William M. Fowler (Geography BS, 1970, MS 1976) is an Environmental Supervisor for Anadarko Petroleum Corporation's International & Alaska Operations Division. Much of his focus is on environmental data collection, permitting, and environmental compliance for oil and gas exploration activities in Alaska. Bill also provides environmental support to Anadarko operations in Qatar, in the Middle East.

Shane Goodnight (Geography & Geology 2000) writes that he is attending the University of Kentucky in the Geology graduate program and has a position as a geology Research Assistant.

Glen Greenwood (Geology 1987) is a sales manager for Bristol-Myers Squibb and lives in Manalapan, New Jersey.

Scott Harris (Geology 1982) has a new position with the U.S. EPA in its counter-terrorism program as an on-scene coordinator, and is completing his dissertation at Oklahoma State University in disaster and emergency management.

Mark S. Held (Geography 1982) went on to obtain Master's degrees in Public Administration from WKU in 1988 and in Construction Management in 1992 from Arizona State University. Mark is a career army officer, 20-plus years, with the Army Corps of Engineers. He currently serves as the Deputy Commander responsible for the Corps program in the South Atlantic Region of the US. In that capacity, he has numerous scientist and engineers in his staff of 4500 employees.

Mark writes that he was delighted and pleased to see the growth and variety of curriculum currently offered by the Department. The increase in staff alone is overwhelming compared to 20 years ago. "Tell your students," writes Mark, "that your programs are highly sought after in both the government and private sector. Good luck in the future and hope to stop by the Department someday."

Kieran Hosey (Geography 2001) works as a geologist for the Kentucky Geological Survey in Lexington, Kentucky.

Karen Marcroft (Geography 1980) lives in Santa Rosa, California.

Robert B. Marcum II (Geography 2002) is a U.S. Navy Naval Aviator. He has just started flight school at NAS Pensacola, and he wants to thank the Department's faculty for the education and involvement in his learning and growing as a student.

Bethany L. Overfield (Geology 2001) is a geologist for the Energy and Minerals Section of the Kentucky Geological Survey in Lexington, Kentucky.

Thomas J. Sabetta (Geography 1975) is a professor with the Kentucky Community & Technical College System, and is past-president of

the Kentucky Communication Association (2001-2002), current editor of the *Kentucky Journal of Communication* (2002-2005), and associate professor of communication at Jefferson Community College.

Denise R. Smith (Geography 1995) works as a PVA Administrative Assistant for the Kentucky Revenue Cabinet. She is currently working as a Property Valuation Administrative Assistant in Scottsville, KY. Denise had a kidney transplant in November, 1998, and is doing well after the operation.

Valerie Timmons-Ellis (Geology 1980) earned her law degree in 1989 from the University of Louisville, and was admitted to the Kentucky Bar in 1990. She is a legal editor for Lexis-Nexis, and is married to Graham Ellis, a chemistry professor at Bellarmine. Valerie writes that her passions are her "husband, painting/photography, and opera (not necessarily in that order) — (no, wait a minute—precisely in the order)."

Sam Vinson (Geology 1996) now lives in Gallatin, Tennessee, where he is a geology instructor at Volunteer State College. He also works part-time as a consultant for Geosciences Design Group (a geotechnical engineering firm). Sam and wife Carrie were expecting their first child (Emma Grace) in November.

Matthew Ward (Geology 2002) lives in Lakewood, Colorado, and is a project geologist with T.S. Tech company.

Greg Willoughby (Geography 1992) lives in Lafayette, Indiana, and is a division agronomist with the Helena Chemical Company. Greg and wife Ang announce the birth of their daughter, Sarah, in February, 2002.

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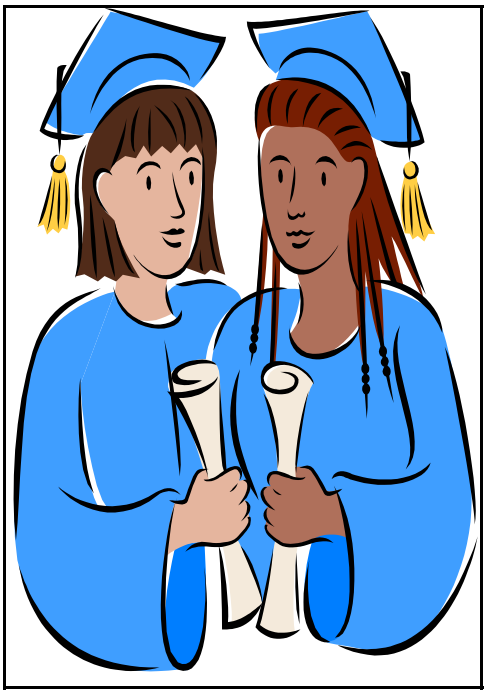

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