


Fall 2008

Geogram 2008

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Western Kentucky University

WKU Department of Geography and Geology

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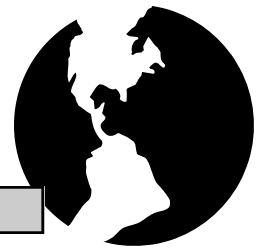
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GEOGRAM



Fall 2008

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

Dear Friends,

Academic year 2007-2008 proved to be another very productive year for the Department of Geography and Geology. Highlights of the year's accomplishments include the following events and activities:

- ▶ Margaret Crowder received the 2008 Ogden College Award for Outstanding Public Service.
- ▶ The Department hosted an International Conference on Karst Hydrogeology and Ecosystems.
- ▶ The Kentucky Mesonet added more data-collection stations around the state.
- ▶ Faculty and students were featured over 100 times in media print and online articles.
- ▶ Over 100 students participated in study-abroad programs, field camps, special field projects, and field trips during the year. Study abroad field-camp programs visited the Bahamas, Mexico, Slovenia, Turkey, Italy, and Greece.
- ▶ The Department awarded 20 GIS Certificates this year; and 30 students have completed half of the requirements.
- ▶ A new BS in Meteorology degree is accepting students, with 40 majors now enrolled in the program.
- ▶ The Kentucky Geographical Alliance received a \$50,000 grant from National Geographic for the third year in succession.
- ▶ A Geoscience graduate student won first place in geography at the annual Kentucky Academy of Science conference.
- ▶ Thirty students were actively engaged in applied



A Letter from the Department Chair

research with faculty through the ARTP and through externally funded research projects.

- ▶ Faculty and students visited multiple overseas locations for research, professional development, conferences, study-abroad programs, expedition study tours, and collaborative activities, including several visits to China and Europe, and visits to Mexico, Colombia, Slovenia, the Bahamas, Russia, Gabon, C.A.R., Mali, Cameroon, and Turkey.
- ▶ Chris Groves visited Nigeria to assist the government with cave protection and tourism development.
- ▶ The Department Head published several Op Eds nationally on geoscience issues from global climate change to immigration and transportation.
- ▶ The Department received nearly \$2.5 million in external research funding over the past year.
- ▶ Kevin Cary, WKU's GIS Center Director, created a website for the Warren County Blueways project.
- ▶ MS Geoscience graduate student Andrea Croskrey had research published in the *Environmental Geology* journal with co-author Dr. Groves.
- ▶ The Department was featured in an article on international reach written by David Keeling in the Spring 2008 alumni magazine.
- ▶ Geology faculty contributed to regional awareness about earthquakes after a 5.2 tremor in April
- ▶ David Keeling lectured on two international study tours for the American Geographical Society, and served as Assistant Treasurer and webmaster of the organization.

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► Thirtyfive students received B.S./B.A. degrees over the past academic year, with another five students earned their M.S. in Geoscience degree.

Faculty and students excelled again in scholarship, research, and professional development, convening and/or participating in myriad professional workshops and presenting about 35 papers at local, regional, national, and international conferences. Faculty also engaged significantly with the local community, continuing to serve on committees and task forces, participating in WKU-sponsored community outreach events such as the *Far Away Places* series at Barnes and Noble, sharing geoscience expertise on WKYU-FM's Midday Edition program, and giving talks at schools, churches, community organizations, and for service groups.

Faculty served as editors or co-editors of professional academic journals or book series, seven faculty reviewed manuscripts for academic journals or publishers, and one faculty organized a special journal issue on the geography of Kentucky. Geography and geology faculty research articles appeared in such diverse journals as *Journal of Geography*, *Progress in Human Geography*, *FOCUS on Geography*, *Climate Research*, and *Journal of Materials Chemistry*, among others. Over twenty faculty research articles or book chapters are either currently in review, revision, or awaiting publication, several co-authored with undergraduate or graduate students, an exceptional level of productivity indeed.

In May 2008, the Department recorded 143 majors in geography, meteorology, and GIS; 66 in geology; and 92 total minors. The Department graduated 35 students from its major programs during the year and it has a target of 40 new majors each year to maintain and grow the programs.

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

Best Wishes,
David J. Keefing
Department Head

*** HOMECOMING ***

Saturday, November 1, 2008

** Special Event: Geography and Geology Departmental Tour (Including our GIS lab, MESONET, and Applied Research Centers).

Time: 11:00 - 12:00pm

Location: Meet on 3rd Floor EST Building

** Special Event: Homecoming Tailgating

Time: 12 p.m. - 3 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.

VISIT THE DEPARTMENT'S WEBWORLD

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

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

Outstanding Geography and Geology Students, 2007-08

The Department of Geography and Geology takes pride every year in the quality of its graduating seniors and, 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 annual Ogden College Awards Ceremony.

For the 2007-08 academic year, Robert Moore received the Outstanding Geology Senior Award, presented by Dr Andrew Wulff. William N. Rodgers received the Ronald R. Dilamarter Outstanding Senior in Geography Award, presented by Dr Rezaul Mahmood. Patricia Kambesis received the Outstanding Geoscience Graduate Student award, presented by Dr Chris Groves.



Dr Andrew Wulff presents Robert Moore with the Outstanding Senior in Geology Award at the Annual Ogden College Awards Ceremony, April 2008



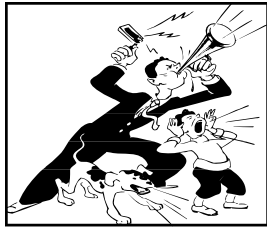
Dr Rezaul Mahmood presents Nicholas Rodgers with the Outstanding Senior in Geography Award at the Annual Ogden College Awards Ceremony, April 2008



Dr Chris Groves presents Pat Kambesis with the 2007-2008 Outstanding Geoscience Award.

**Congratulations to ALL
our Outstanding Students!**

Introducing Our Newest Faculty Members:



Dr Josh Durkee

Dr Josh Durkee returns to WKU to join the faculty as an assistant professor of meteorology and climatology. After Dr Durkee left the Department in 2000 with a B.S. in Geography, he headed to Athens, GA., where he received an M.S. and Ph.D. in Geography from the University of Georgia. His Master's thesis examined spatial and temporal relationships of precipitation efficiency of large, long-lived thunderstorms in the central U.S. Continuing with this theme for his Ph.D. dissertation, Dr Durkee used remote-sensing techniques to develop a climatological database of these thunderstorm complexes in order to assess their role in the spatial variability of rainfall across subtropical South America.

While at UGA, Dr Durkee published other research projects involving teleconnections and cold-season precipitation patterns in the eastern U.S., the climatology and dynamics of severe wind-storms not associated with thunderstorms, and educational reform techniques used to assess and improve lab sections in weather and climate courses. Dr Durkee plans to incorporate his research interests into courses such as mesoscale meteorology in the new B.S. Meteorology program. He is particularly excited about engaging students in research, as well as helping to maintain a thriving and successful meteorology program.

He also plans to develop a real-time weather site for WKU and a storm-chase program that students can participate in after the school-year ends. His professional interests in extreme weather and climate events stem from the disastrous outcomes that are the unfortunate results of such events. His overall goal is to gain a better understanding of these types of hazardous events so that the risks associated with these events will be minimized.

Outside of academics, Dr Durkee enjoys playing live music to the fine tune of various jazz, bluegrass, folk, and Americana styles. If the opportunity should arise, he would also like to get back to playing ice and street hockey. Of course, nothing is more fun for him than hanging out with family. Dr Durkee is especially excited about returning to Bowling Green with his wife Becky, and three children, Hunter, Sierra, and Bella, and being close to his hometown of Evansville, IN, where his and Becky's families reside.



Dr Lee Florea

Lee joined WKU in Fall 2008 after completing a two-year appointment as a Mendenhall Postdoctoral Fellowship with the US Geological Survey in Ft. Lauderdale, Florida. His post-doctoral research focus was on the Pleistocene Biscayne aquifer of southeast Florida – a critical-source aquifer for approximately 5.5 million people in the cities of West Palm Beach, Ft. Lauderdale, Hollywood, Miami, and the Florida Keys including Key West. That research had two themes: the geochemistry, microbiology, and isotopic fractionation of precipitation, surface water, and shallow groundwater in Everglades National Park; and nuclear magnetic resonance imaging (NMRI) of groundwater flow through 3-D renderings of flow units.

Prior to his appointment with the USGS, Lee completed his Ph.D. at the University of South Florida in Tampa under the advisement of H.L. Vacher, a well-known hydrogeologist and carbonate island stratigrapher. His dissertation research focused upon three major aspects of hydrogeology in the Floridan aquifer of west-central Florida: 1) the morphology of caves, 2) hydrogeology of springs, and 3) the effect of long-term sea-level fluctuations on the Florida platform and how they relate to the known marine terraces, paleoshorelines, and cave levels of west-central Florida. Lee's dissertation, "The Karst of West-Central Florida," is published in four peer-reviewed papers in *Ground Water* (2), *Quaternary Science Reviews*, and the *Journal of Caves and Karst*.



Lee is an alumnus of WKU. He earned a B.S. in Physics and Math in 1995 followed in 1996 by a certification to teach science in secondary education classrooms. Following a two-year stint at the University of Missouri-Columbia for an M.S. in Geoscience, Lee worked for three years as a geologist for the KY Department for Surface Mining in Frankfort. While in Frankfort, his connections with John Mylroie at Mississippi State University opened opportunities on carbonate islands and tropical karst environments that continue to this day.

For more than 15 years, Lee has been an avid caver and has explored and surveyed caves throughout the U.S. and Europe. While an undergraduate at WKU, he was a member of the Green River Grotto and spent considerable time at Mammoth Cave National Park as

a JV for the Cave Research Foundation. From 2000-2002 he served as the founding president of the Kentucky Speleological Survey and the manager of the Wells Cave Nature Preserve owned by the National Speleological Society in Pulaski County, KY. Currently, Lee is a Fellow, Life Member, and a sitting Director of the National Speleological Society. In recent years, he has conducted paleoclimate and geophysical research in the Apuseni Mountains of Western Romania. This past year, Lee, along with others, has mapped caves in downtown Miami in collaboration with the Miami-Dade County Dept. of Parks and Recreation.

Over the next couple years Lee intends to focus on building a research program at WKU that fits in with existing strengths of the Department. He is excited to be back in Kentucky and back in the classroom. When not around campus, Lee is likely off caving, running, biking, hiking, or kayaking in the wonderful scenery of his homeland. At the present time, he is helping his mother can beans, tomatoes, applesauce, and blackberry jam on their family farm in the Daniel Boone National Forest. This winter term he hopes to focus on writing. In particular, he hopes to work on his contract to write "Roadside Geology of Kentucky."



This large cave was explored and mapped by a 2007 WKU CEHP expedition in collaboration with Chinese colleagues. To the lower right of the entrance CEHP Director Chris Groves can be seen with USAID's John Pasch and John Hill of the U.S. State Department.



Op-Eds About Issues of Importance to Society

*By David J. Keeling
Department Head*

As a member of the American Geographical Society's Writers Circle, I continue to write commentaries about relevant social issues viewed from a geographer's perspective for publication in the local, regional, national, and international media. These Op-Eds have ranged from arguments about transportation investment in the U.S. (see below) to global climate change's impacts in the Arctic region. Part of the mission of the American Geographical Society (www.amergeog.org) is to stimulate debate on issues of importance to society and to highlight a geographic perspective on such issues. Scientists too frequently are accused of failing to engage with public policy in a meaningful way (witness ongoing debates over global climate change), so writing opinion pieces for local newspapers is one way to encourage a dialogue about important social and political issues. Our hope is to encourage the citizenry to engage with these issues at the local and regional level, thus helping to influence policies in a proactive way.

The following Op-Ed addresses the failure of the U.S. to investment in basic transport infrastructure. The long-term implications of this failure could be disastrous for both economy and society, and will have a negative impact on the U.S.'s ability to compete effectively in a global economy. This Op-Ed appeared in a number of newspapers around the country.

WHO WILL PUT AMERICA BACK TOGETHER AGAIN?

Chicken Little was on to something. Although the sky isn't falling just yet, there are other components of America's infrastructure that are failing badly. From collapsing interstate bridges and near-misses at overcrowded airports, to vulnerable electrical and water

networks, U.S. infrastructure is in poor shape. Just recently, all air traffic within 250 miles of Memphis was shut down for several hours because of a computer failure. Inadequate infrastructure costs American workers and businesses time and money, leads to inefficiencies, and restricts our ability to engage productively with the global economy. Without significant investment in infrastructure over the next decade, the U.S. could face a serious economic downturn and a loss of global competitiveness.

Transportation infrastructure stands out as a critical component of the nation's economic engine. Transport facilitates accessibility and mobility, it enables social and economic interaction, and it shapes the geographies of people and places in productive ways. Without adequate transport infrastructure, societies and their economies cannot interact and use capital in ways that add value and create opportunities. Countries like Haiti, Afghanistan, and Burkina Faso sit at the bottom of the global development rankings in part because they have inadequate infrastructure to drive socio-economic growth. In contrast, economies such as the U.S., Germany, and Japan grew impressively after World War II because of significant investment in transportation and communication infrastructure. Unfortunately, the U.S. has not sustained this level of infrastructure investment in recent years.

Emerging economies like China and India, as well as regional blocs like the European Union, recognize the value of new or rehabilitated infrastructure in enhancing national and international development. From building new airports and high-speed rail networks to paving dirt roads and facilitating better communication, economies on the move are investing in the infrastructure needed to engage more productively in regional and global activities. Yet although transport infrastructure is necessary for development, it is not sufficient. Countries also need good planning, meaningful education systems, and a desire to improve individual accessibility and mobility for the benefit of the larger society. The U.S. is failing in many of these areas, but most importantly in the provision of adequate transport infrastructure.

Across the U.S., the aviation system is on life support. Inadequate investment in new runways, computer systems, global positioning technology, and air traffic control networks has stretched the existing sys-

tem to its limit. Despite the efforts of the professionals who run the system, the risk of collisions, significant delays, and mounting passenger frustrations will continue to grow exponentially. Indeed, the US aviation system is unlikely to cope with projected air traffic growth over the coming decade. On the ground, America's fastest intercity rail service, the northeast's Acela, compares unfavorably to intercity rail networks in Europe and Asia, where speeds over 160 miles per hour are routine. Beyond the northeast corridor, U.S. passenger rail services are an embarrassment and exist on minimal funding and outdated equipment.

The U.S. led the world from the 1950s onwards in building a limited-access highway system that connected producers and consumers across the country quickly and efficiently. Yet inadequate investment in repairs and maintenance over the past thirty years has left the national road network vulnerable to collapse – witness recent bridge failures in Minnesota and elsewhere. Poor highway maintenance also contributes to accidents that take lives and destroy property, costing the U.S. billions of dollars annually in lost productivity and the immeasurable damage to families and communities.

Transportation infrastructure must take center stage in U.S. efforts to become more nationally and globally competitive. From the president and the Congress down to local governments and business leaders, our nation needs strong and imaginative leadership that will build and repair infrastructure. Anything less will condemn America to an ineffectual role in an expanding global economy, to a deep and damaging economic downturn, and to a resulting decline in overall quality of life. The sky isn't falling yet, Chicken Little. But it will without meaningful and widespread investment in infrastructure now and in the future.

WKU Geoscience Student and Faculty Attend International GIS Conference

Another Geoscience graduate student received a scholarship to participate in the 28th Annual Environmental Systems Research Institute (ESRI) International User Conference convened August 2-8 in San Diego, CA. S. Matt Brunt of Bowling Green was selected from a pool of applicants for the competitive

scholarships, which supported 60 graduate and fourth-year undergraduate students from universities and colleges throughout the United States. The scholarships required students to work half-days at the conference while it covered their conference registration, workshops, meals and lodging. This is the seventh year in a row that the Department has had a student selected for the scholarship.

Also attending the conference were Geoscience graduate student Allison Ross of the U.S. Army Corps of Engineers in Nashville and faculty members Amy Seymour, Scott Dobler, and Kevin Cary. Cary, director of WKU's GIS Center, presented "Streams and Networks" about Warren County's Blueways project, with Dr. Steve Spencer of the Department of Physical Education and Recreation.

ESRI is the biggest organization and vendor of geographic information systems (GIS) software in the world. Each year, ESRI hosts an International/Educational conference for GIS users in San Diego to share ideas and gain knowledge about GIS technology. For this year's event, there were more than 14,000 attendees from at least 120 countries and 350 sponsors. "It is important to attend this international conference because it showcases so many applications in GIS as well as informing us where GIS is today and where it will be tomorrow," Cary said. "This opportunity allows us to enhance our program to better our students pursuing GIS as a tool or as a profession."

For information about GIS, WKU's GIS Programs, and GIS applications in business and industry, contact Kevin Cary in the Department of Geography and Geology at (270) 745-2981. For information about applying for an ESRI student assistantship, contact Matt Brunt at samuel.brunt492@wku.edu

THE COLLEGE HEIGHTS WEATHER INSTRUMENT MUSEUM

L. Michael Trapasso
(Director of the College Heights Weather Station)

Retirement: it's not just for people anymore! This retirement concerns a good, loyal friend and ally to the Department of Geography and Geology for eight decades ... the College Heights Weather Station.

With all the excitement about our new Kentucky MESONET Project, we seem to have forgotten the old weather station. The College Heights Weather Station was once a premiere facility in our Department. Coupled with the Kentucky Climate Center, it formed the core of our Meteorology/Climatology facilities for years before my time. FYI, there has been a weather station, of some kind, on this campus since 1928! The Weather Station has always been used as a teaching aid and research laboratory for our Meteorology/Climatology students. In recent years it has been a part-time employment opportunity for a few students to learn how to collect and archive weather data manually, the old standard way.

I am very sad to announce the College Heights Weather Station is on its death bed. This past summer I 'retired' one of the 2 microbarographs, and the wind recorder gasped its last breath (pun intended). The thermograph and hygrograph (temperature and humidity instruments, respectively) have 'bitten the dust' as well. Oddly enough, the instrument sensors are still accurate, but the recording-chart drive mechanisms are failing and cannot be replaced. All of our back-up chart-drives are either in use, or have also failed. They just don't make spare parts for these instruments anymore. Instrument recording-charts and recording ink are either no longer available, or cost exorbitant amounts of money to 'special order' them. Finally, when I retire there will be no one left to supervise the maintenance and care of our ailing senior citizen.

What to do? Well we certainly won't dismantle it! Former Kentucky State Climatologist Glen Conner and I, on many occasions, discussed the idea of creating a weather instrument museum. My predecessor, Willard Cockrill (you older alumni may remember Mr. Cockrill), was a 'pack rat' of sorts, and kept all kinds of old and outdated equipment. Frankly speaking I followed his lead. We have in our possession instruments labeled "U.S. Army Signal Corps" and "U.S. Weather Bureau." We even have a 'wet-process' fax machine. You younger alumni wouldn't even know what that is! We've got many museum-quality pieces. Throwing them out is not only short-sighted but downright stupid. We have the makings of an excellent weather instrument museum that school groups and other visitors can visit and enjoy for years to come.

David Keeling and I discussed this plan and decided to use Room 425 the way it has always been used ... as the College Height Weather Station. But now it will be re-designated as the College Heights Weather Instrument Museum*. Who will create this museum? Who else? I will of course. The transformation will likely begin during my first semester on optional retirement (Fall 2008).

Now here is where YOU come in. I'm sending out a call to all alumni of our B.S. Program in Geography, in the Meteorology/Climatology Track, and our A.S. Program in Meteorological Technology. Do you have any fond memories, amusing stories, or general comments about the old College Heights Weather Station? Perhaps you're old enough to have taken GEOG 222 (Observational and Analytical Meteorology) with Mr. Cockrill, back in the days when he required the class to run shifts for 24-hours straight at the Weather Station, collecting hourly data while cleaning and calibrating the instruments.

Were you one of the brave souls who volunteered with me for Severe Weather Spotting on Campus, when the Weather Station and Pearce-Ford Tower were used as the observation posts? Maybe you were one of the students who worked a summer assistantship at the Weather Station where we developed and published a research project. Perhaps you're one of the more-recent alumni who worked in the Weather Station through the semester for 'short money' but 'lots of experience'.

If you are any of these people and would like to share your stories concerning the College Heights Weather Station, I would love to hear from you. You can contact me through our Departmental mailing address.

In this day and age of sloughing off the old to make way for the new, I think it will be both unique and 'classy' to have our own instrument museum for a discipline that has always been an integral part of the Department of Geography and Geology. In the future, when you're in town and visiting the Department, please stop by and tour the new College Heights Weather Instrument Museum.

- Actually, this could become a working museum since the weather station still has some functioning instrumentation, and we may find some students who wish to monitor them.

Geology Students Study Meteorites

Chelsea Brunner, a junior Geology major from Louisville, Kentucky, and senior Geology major Kristin Leftwich, from Cheatham, TN, have both been examining meteorites in conjunction with summer Research Experiences for Undergraduates (REU) with Dr Denton Ebel at the American Museum of Natural History in New York City. Ms. Brunner presented her research at the 71st Annual Meeting of the Meteoritical Society in Matsue, Japan, on Friday August 1, 2008. Chelsea's research is an extension of work that she started in the summer of 2007 and her talk was titled: "Abundances and Sizes of Clast Types in the Allende CV3 Meteorite: New Results from Mapping Analysis." Ms. Leftwich worked on a project entitled "Classification and Measurement of Inclusions in the Allende Meteorite" that was, in part, an extension of work that Chelsea started the year before. Their research involves the examination of Ca-, and Al-rich inclusions (CAIs) in the Allende meteorite, which is classified as a carbonaceous chondrite meteorite. Samples of the meteorite were recovered from a strewn field in the Chihuahua State in Mexico in 1969. The inclusions in the meteorite originally formed as free-floating aggregates of mineral dust, some of which were partially or fully melted to form droplets in the solar nebula. Brunner and Leftwich studied different meteorites, the different types of inclusions, the hypotheses for their formation, and why the measurements of the inclusions are important in testing such hypotheses. They mapped the surfaces of the meteorites using a Scanning Electron Microscope (SEM) and an Electron Microprobe, and computed relative surface area and size distributions of different types of inclusions, matrix, and chondrules. The abundances and the distribution of these different inclusions pertain to theories of their origin and planet formation.

Ms. Brunner also received a grant from the Geological Society of America to continue work on the project after her summer REU was completed. Leftwich will be continuing aspects of her research in the Dept. of Geography and Geology working with Dr Andrew Wulff, and will be presenting results at the 40th annual Lunar and Planetary Science conference in March, 2009. Chelsea and Kristin bring to eight the number of geology majors who have been able to par-

ticipate in national REU opportunities the past five years!

Chris Groves Leads U.N. Water Session in Norway

Western Kentucky University geography professor Chris Groves returned from Norway this week where he convened a technical academic session on "International Perspectives on Karst Aquifers and Water Resources" at the International Geological Congress. The water resources symposium was one of hundreds taking place at the Oslo meeting and is sponsored by the United Nations' International Geoscience Program Project "Global Study of Karst Aquifers and Water Resources." Groves serves as project leader of the five-year U.N. project, along with co-leaders Yuan Daoxian from China, Spain's Bartolome Andreo-Novarro, and Heather Viles of Oxford University in England.

Karst regions are characterized by features such as caves, sinkholes and underground rivers formed in limestone bedrock and typified by the landscapes of south central Kentucky around WKU. "While it has been estimated that over one billion people rely on karst aquifers for water supply," Grove said, "these systems often present serious challenges with regard to both water quantity and quality, even in places of relatively abundant rainfall."

In China alone, the quality of life for tens of millions of people may be impacted by the difficulties of water access in these areas. Speakers at the Oslo karst water session shared experiences from Brazil, Serbia, China, Turkey, Uzbekistan and others. Groves said one talk highlighted international trans-boundary issues at a large water supply spring in Iraq, much of whose water originates as rainfall and snowmelt across the border in Iran.

Thousands of scientists gathered for the International Geological Congress, the largest earth sciences meeting in the world, held every four years at various locations. This year's location in Norway served as a great base for geologists to participate in field excursions before, during and after the meeting to learn about locations throughout Scandinavia, Russia, and Greenland.

In other sessions Groves presented “Contributions to Karst Science and Education from the Mammoth Cave Region, Kentucky USA” co-authored with William B. White of Pennsylvania State University and “Training Efforts for Water Resource Development in Southwest China’s Karst Regions,” co-authored with Yuan Daoxian of China’s Southwest University.

Hoffman Institute Graduate Students Present Research at Slovenian Environmental Conference

In June 2008 WKU Geoscience graduate students Brian Ham, Julie Schenk-Brown, and Mark Tracy visited the eastern European nation of Slovenia to participate in a weeklong workshop and present research at the 16th International Karstological School Workshop on Karst Sediments. Ham (from Nashville, TN), Schenk-Brown (Gurley, AL) and Tracy (Cobleskill, NY) are each at WKU for M.S. programs that involve research into karst landscapes like those of south central Kentucky, where caves and underground rivers are common and within which water-related environmental problems are common.

The international conference is sponsored each year by the Slovenia Karst Research Institute in Postojna, one of the world’s premier locations for such research. “Scientists around the world consider Slovenia to be the classic home of karst landscapes, and some of the earliest major scientific research about them took place there,” according to Chris Groves of the Hoffman Environmental Research Institute and Tracy’s and Ham’s research advisor. “Even the term *karst* itself has roots on the Slovenian language.” Travel was made possible by grants received by the students from the European Commission’s 6th Framework Programme for Research and Development.

The three students gave presentations on current research during the week, in between a busy schedule of lectures from an international collection of scientists and field excursions. Because of the strong common interests between WKU, the Slovenian karst research group and the Mammoth Cave International Center for Science and Learning, an active cooperative relationship is evolving. This trip follows a visit by Dr. Martin Knez to WKU in 2007 and another group of 14 WKU students and faculty that visited the Slovenia Research Institute in June month as part of a

study abroad trip to the Western Mediterranean region led by David Keeling, Debbie Kreitzer, and Will Blackburn.

Hoffman Scientists and Students Conduct Water Resource Training in China

Scientists and graduate students from WKU’s Hoffman Environmental Research Institute visited China from mid-January to mid-February to organize and conduct a hydro-geologic field methods workshop at Chongqing’s Southwest University and a field mapping expedition in Yunnan Province. The China Environmental Health Project (CEHP), a multi-year program of the Hoffman Institute, is funded through the U.S. Agency for International Development (USAID) and the ENVIRON Foundation. The CEHP has been made possible through the support of Kentucky’s senior Senator Mitch McConnell. The China project is part of the Hoffman Institute’s global technology transfer initiative and is, in part, designed to assist other countries in developing their GIS capabilities.

“The workshop and the field mapping project mark another major accomplishment in meeting the goals of both USAID and ENVIRON Foundation support for the CEHP,” according to Dr. Chris Groves, director of the Hoffman Environmental Research Institute within WKU’s Applied Research and Technology Program. “Our long-term goal is to increase Chinese academic infrastructure for karst water resource development, of course ultimately to enhance environmental health in China in a sustainable way.”

The 2008 karst field methods workshop took place from January 12–16, 2008, at Southwest University, Beibei, Chongqing. The workshop was followed by a nine-day field session that included hydrologic karst inventory, field mapping, and water/soil sampling on the remote East Mountain Plateau in southern Yunnan Province, close to China’s border with Vietnam.

Western Kentucky University participants included Patricia Kambesis (Assistant Director of the Hoffman Institute), Erin Lynch (MS Geoscience graduate student, Arlington, VA), and Andrea Croskrey (MS Geoscience alumna, Blakesburg, IA), with affiliated student researchers from partner universities including Duncan Collis, Alan Cressler, Matt Oliphant, Nancy Pistole, and Charley Savvas. Participants from the Hoffman Institute’s partner university in China, South-

west University in Chongqing, included Dr. Jiang Yongjun, Lee Ling Lee, Li Yang Gang, Wang Zhujuin, Xiao Loa, Mei Yang, and Pu Jan Bing.

The workshop covered:

- Instruction in basic hydrologic field work documentation, cave mapping and GPS methods;
- Georeferencing of field data and transformation of field data into digital maps and GIS representations.
- Instruction in basic Single Rope Techniques (SRT) with a strong emphasis on safety. These methods allow safe negotiation of the pits often found in southwest China caves.

A total of 14 Chinese graduate students and two faculty members participated in the workshop held at Southwest University. After an initial overview and orientation for all students, the workshop was conducted in split sections of eight students each. A survey section was run concurrently with an SRT section. After a break, the two groups of students switched sections so that all students received the same amount of instruction on each topic each day. Two instructors taught the survey session, which involved field mapping techniques and methods, digital cartography, and GIS.

Six instructors taught the SRT section. This allowed for a nearly one-to-one student/instructor ratio, which provided each student with focused instruction to mesh with their personal learning curves. Instructors were able to ensure that each and every student understood safety concerns and how to deal with them.

The primary goals of the East Mountain mapping expedition were:

- To continue field work started in 2007 in the demonstration area at Mengzi and Kaiyuan;
- To collect water samples and soil samples at various springs and cave locations;
- To provide field experiences to the Chinese graduate students in karst feature documentation, cave mapping and data management;
- To provide Field practice and experience for the Chinese graduate students in SRT;
- To demonstrate the logistics of expedition planning, expedition field work, field data processing, cartography, and report writing for the Chinese students;
- To document the field work conducted during the expedition.

A total of 57 karst features were located with GPS technology, and then mapped and photo-documented.

Each feature was given a unique number and detailed descriptions were written up for all features. GPS track logs documented 150 kilometers of ground that were covered during the field reconnaissance. Twenty seven shafts and 30 caves were documented and added to the GIS database. The Southwest University team, with support from the WKU team, collected 46 water and soil samples to be analyzed for water quality and contamination issues. A detailed geologic and hydrologic report with maps will be produced from the field data generated in 2007 and 2008.

"This recent workshop and field mapping project in China are great examples of how WKU faculty and students are helping to improve both the intellectual and practical quality of life of individuals around the world," noted Department of Geography and Geology Department Head, Dr David Keeling. "The China Environmental Health Project is an exemplar for how Western Kentucky University is extending its international reach and making a measureable difference in people's lives both locally and globally."



Adventures in Geoscience

Death and the Dead Sea: Geography, Geology, and History Converge in Israel

By
L. Michael Trapasso

A trip to the Holy Land had been on my mind for several years. I always wanted to spend time in Israel, and especially Jerusalem, one of the oldest cities in the world. As a place visited and conquered by so many different civilizations, it's hard to keep them all straight. Four thousand years of history are hard to absorb in one trip. Walking in the footsteps of Jesus and His Disciples has got to stir you, regardless of your religious leanings. Places like Bethlehem, Nazareth, Jericho, the Jordan River, and the Sea of Galilee are all within short driving distance in a country much smaller than Kentucky. Driving short distances will also bring you to the borders of Syria, Lebanon, Jordan, Egypt, and Palestinian held territory; all posing potential threats to this tiny nation. The tales of these sites would take an exorbitant amount of space, so I'll limit myself to two locations I visited one day, the ancient fortress of Masada and the Dead Sea.

The Jordan River flows south from the Sea of Galilee (a surprisingly small, fresh-water lake) into the Judean Desert to the Dead Sea. South from Jerusalem, one passes by the caves at Qumran, where the Dead Sea Scrolls were found. Continuing down the 'West Bank' border with neighboring Jordan, one comes upon the huge mountain fortress of Masada. This was of special interest to me because of its place in history and the extraordinary fortifications it represented. The name Masada is derived from the Hebrew word, Mezada, meaning 'fort'. Fortifications of any era and type have always had a draw for me.

Geographically, Masada stands on the eastern fringe of the Judean Desert, 450 meters (1475 ft) above the Dead Sea. It is approximately 650 meters (2130 ft) long and about 300 meters (1000 ft) wide. It is a very steep-sided mountain block that was uplifted and later detached from the remainder of a fault escarpment. Bordered on both sides by *wadis*

(dried stream beds) denote some fluvial cutting on the slopes as well. Built by Herod the Great, King of Judea, Masada was a palatial fortress in the style of the ancient Romans and offered impregnable defenses for years.

When King Herod died in 4 BCE, The Roman Empire annexed Judea. In 66 CE the Jews began the "Great Revolt" against the Empire, until 70 CE when the Romans destroyed Jerusalem and the Second Temple. The Great Revolt ended except for a small group of zealots who, like guerilla warriors, sniped at the Romans whenever and where ever they could. The 10th Roman Legion chased the Zealots to this mountaintop fortress. With its vast internal reservoir of water and store rooms overflowing with food, defenders could outlast anyone laying siege in the Judean Desert, next to the Dead Sea. From there, 960 Jewish zealots held their ground in imagined safety.

The Romans knew what was in store for them ... a Roman Legion had been garrisoned at Masada some 60 years earlier. The 10th Roman Legion (about 8000 men) laid siege around that mountain for about 3 years preparing a means to attack. Engineers par excellence, the Romans actually dismantled a nearby smaller hill, and used the material to build a giant ramp so their large siege towers and battering rams could access the walls at the summit.

When the Romans finally breached the walls and rushed the fortress, they found that the Zealots had committed suicide rather than be taken as slaves. It was hollow victory for the Romans and a cry of freedom by the Jews. Nowadays, Israeli Soldiers take their oath of allegiance atop this sacred place and all swear, "Masada shall not fall again."

From Masada's walls one can look out onto beautiful shades of blue water. The many hues changed with the waters depth and sun angles. There sits the Dead Sea, whose acrid water hardly deserves those soft shades of azure. The Dead Sea is about 420m (1378 ft) below sea level and is the world's lowest point on dry land*. At 330m (1082 ft) deep, it is the deepest hyper-saline lake in the world. It measures 67 km (42 miles) long and 18 km (11 mi) wide at its widest point. It lies in the Jordan Rift Valley with Israel and the West Bank (of the Jordan River) to the west and Jordan to the east.

The Dead Sea is an endorheic lake (a lake with no external drainage) located in the Jordan Rift Valley and formed by the Dead Sea Transform. This left-lateral moving transform fault lies along the tectonic plate boundary between the African Plate and the Arabian Plate. About three million years ago, the Jordan River Valley was repeatedly inundated by water from the Mediterranean Sea. The water formed a narrow crooked bay that was connected to the sea through what is now the Jezreel Valley. The flooding came and went with climatic fluctuations. Salt deposits in the Dead Sea Rift eventually accumulated to 3km (2 miles) thick. About 2 million years ago, the rift valley rose to a level where it would no longer be flooded by the Mediterranean water, and thus the long bay became a salt lake.

We were given the opportunity to enter this bizarre body of water, and I was anxious to try it. Before entering the water, you're encouraged to cover your body in salty mud on the shore. It's supposed to be real good for your skin. The Dead Sea was perhaps the first health spa in history. It was first used by King David, no doubt after a tough day at the office.

There is no way to drown in the Dead Sea because you can't sink in water that dense. One must float in a seated position and it feels like you're sitting in an inner tube. With your butt at its lowest and your shoulders and legs bobbing at water level, getting out of that seated position and back on your feet causes one to contort and maneuver in a rather comical ways.

When floating in the Dead Sea, there are definite rules to keep in mind. Swimming and splashing are NOT allowed. You are warned not to get any water in your: mouth, nose, eyes, and ears. The water contains about 31.5 % salt, that is nine times saltier than the 3.5% salt content of the Mediterranean Sea. Along the shoreline, the salt deposits (little nodules) look like a carpet of white popcorn circling the beach.

Water that salty can really hurt you. Of course I just had to lick a bit of it off my wet finger. Mercy ... I never tasted anything that salty. No amount of spitting could get that taste out of my mouth ... and spit I did! When I got to shore, drinking from my water bottle didn't help much. It wasn't until later that day that a good slug from a Maccabee (an Israeli beer) finally washed that salt taste from my mouth.



Along the line of ecological disasters, the Dead Sea is one in the making. The intense agriculture that makes Israel so green compared to all its neighbors, draws fresh water from the Jordan River. Decreasing the input of fresh water into the Dead Sea, not to mention high evaporation rates, is causing the Sea to shrink, and it is disappearing by about 1 meter/year. This loss of both surface and sub-surface water is causing collapse sinkholes to form along the shore lines. There are also signs of devastation in the surrounding flora and fauna by receding water and climbing salinity levels. I guess if you want to turn an arid country into an agricultural garden, as the Israelis

The Dead Sea viewed from the Masada Walls

have done,... you have to pay a price!

Masada and the Dead Sea: two places adjacent to each other geographically but also symbolically. The two represent stories that deal with death. Both are so tragic, both so intriguing and, in their own ways, both so beautiful.

*Along the road, there is a marker designating sea level. It's amusing to stop at a marker for "sea level" and there is no sea shore in sight!

Margaret Crowder, with five members of the Geology and Oceanography VAMPY class



Margaret Crowder with Girls in Science Day class, March 2008 (along with Thandi Buthelezi and Kami MacDonald).



STUDY ABROAD PROGRAMS

By Debbie Kreitzer

This past year the geography program offered two study abroad opportunities for our students. The first was to the Yucatan Peninsula in conjunction with the Sociology Department in the Winter Term. The second was a Geography study abroad to the Mediterranean region in the May term. Both programs offered students the opportunity to immerse themselves in different cultures and become more engaged with the world around them.



In January 2008, Debbie Kreitzer and Dr David Keeling joined forces with Dr Holli Drummond from the Sociology Department and historian and guest lecturer John Dizgun to introduce 30 students to Mexico, and more specifically the Yucatan Peninsula. The plan was to introduce the students to social and environmental issues facing the Mexican people. In a two week period the group traveled to Valladolid, Merida, Campeche, Palenque, San Cristobal, Lake Bacalar, and Tulum. Students were able to experience first

hand the poverty and basic economic and infrastructure challenges faced by the people living in this area. Students visited archeological sites like Chichen Itza and Uxmal, indigenous villages, and modern cities in the Yucatan peninsula. They were able to understand the connections between disciplines like geography, sociology, and history by engaging with the different professors and the people living in Mexico.



As well as intellectual stimulation, students were able to participate in some fun and unique activities. For example they were able to swim in the beautiful Cenote Ik Kil, which is basically a very deep sinkhole filled with groundwater. Cenotes were an important source of water for the Mayans. Today there are a few

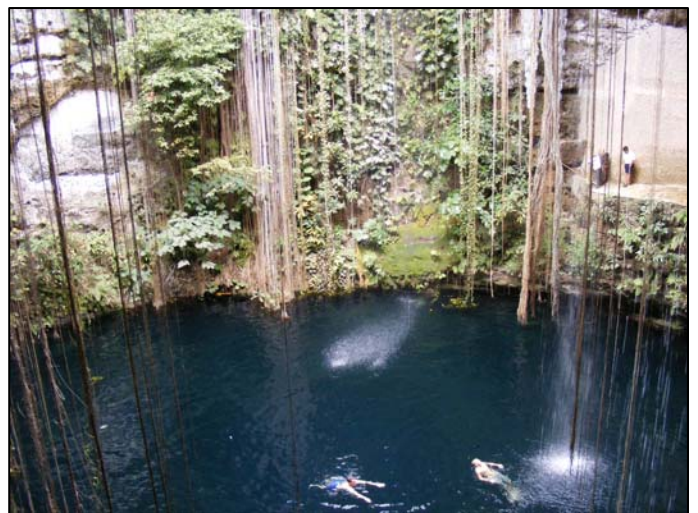
that have been converted to tourist attractions and make great swimming holes. Students also were able to tour many of the sites that contain beautiful Mayan ruins, browse indigenous markets, and explore beautiful beaches.



During the May term, the Geography program offered a study abroad to the Mediterranean Region. Dr David Keeling, Will Blackburn, and Debbie Kreitzer, along with 10 students, examined development, land-use, and natural resource issues that are shaping Turkey, Greece, Italy, and Slovenia. They also learned valuable lessons about Islam, the European Union, and the importance of transportation.

The program began in Istanbul, a unique city that is both European and Asian and, although Islamic, has strong ties to early Christianity. The group was able to tour the famous Blue Mosque and the Sophia Hagia, one of the oldest Christian churches (then a mosque, now a state museum), and Topkapi Palace.

The next stop was the port city of Kusadasi where students were able to explore the beautiful markets and tourist beaches. They were also able to take a day trip to the Roman ruins at Ephesus. From Turkey, the group took a ferry to the Greek Island of Samos, then from there to Mykonos. This beautiful island is famous for its white buildings with Mediterranean blue trim among other things. Environmental and cultural



geography were among the topics discussed in this beautiful location as well as the importance of the European Union. After a couple of days the group



then took a ferry to Santorini, the Greek group of islands remaining from the world's largest known volcanic explosion. Climate change was among the topics discussed in this unique location. Three days later, another ferry took the group to Athens. While staying in Athens the group not only saw the important historic sites like the Acropolis, but also took a day trip to Delphi.



An overnight ferry trip then took them to Bari, Italy, and from there they took the train to Bologna, which was their "base" city for the next 5 nights. While in Italy the group took day trips to Florence, Venice, and Rome, as well as exploring the city of Bologna.

From Italy the group took the train the one of the best-kept secrets of Europe, the country of Slovenia. Formerly part of the country of Yugoslavia, Slovenia became an independent country in 1991. It is a small alpine country (population just a little over 2 million) nestled next to Italy and Austria. The significant part of the topography is karst, and WKU's Department of Geography and Geology (Hoffman Environmental Research Institute and the Center for Cave and Karst Studies) is associated with Karst Research Institute in Postojna. The group was lucky enough to spend an entire day touring the karst area of Postojna. They also spent a day in the Alpine town of Bled and a day touring Ljubljana.

This study abroad experience concluded back in Italy in San Donà di Piave (near Venice). All of the students reported that this study abroad experiences was a great learning experience and very fun and exciting. For more information about the departments study abroad opportunities please email Debbie Kreitzer <debbie.kreitzer@wku.edu>.



SUMMER FIELD GEOLOGY

By Andrew Wulff

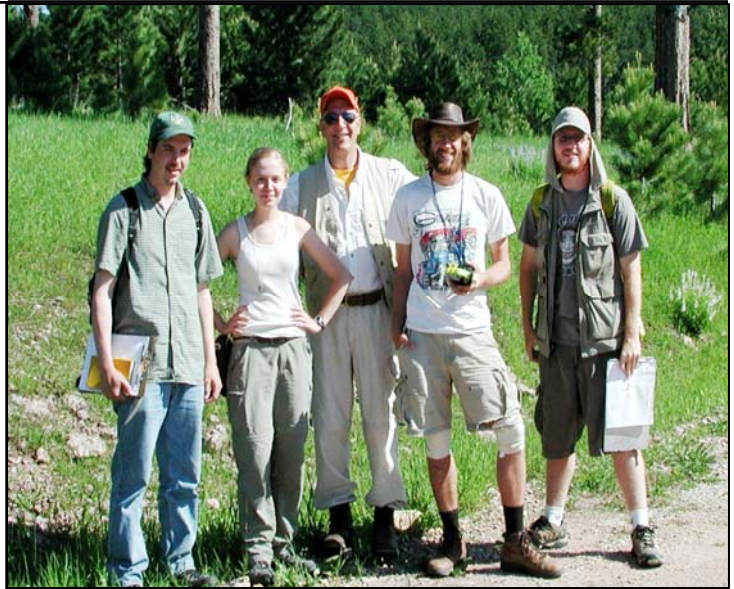
Undergraduate geology majors again participated in a geology field course this past summer, along with students and faculty from Illinois State University, Northern Illinois University, Central

Michigan, and Eastern Michigan Universities. Students Chelsea Brunner, Seth Cude, Isaaah Land, and Robert Moore studied the geology of South Dakota, Montana, and Wyoming for six weeks from May 18 through June 28. Graduate student Samantha Kramer (working with Dr Celestian) served as a wonderful TA for the first three weeks of the course, encouraging all participants with her contagious laugh and stories from her experiences the year before as a student “mapper.” The encouragement was necessary as every day for these first weeks saw some sort of cold precipitation, including 40” of snow at one locale!! Where are the rocks?!!

Dr Andrew Wulff brought sunshine for the final three weeks, as the geology emphasized igneous and metamorphic terrains. The course, which is a capstone for geology B.S. majors at WKU, emphasizes field mapping techniques to develop geologic maps, construct geologic cross sections, and address some of the practical applications of these maps. Students also composed detailed rock descriptions, measured and constructed stratigraphic sections, and wrote reports and abstracts of their work. Projects included mapping exercises in the Bighorn Mountains, Badlands, Black Hills, Whitewood Peak, and Absaroka volcanics, which immersed students in a wide range of geologic structures, depositional environments, and rock types. Additional trips to Yellowstone Park, Devils Tower, various mining operations, and other areas of geologic interest led by national experts extended the geological experiences, and built context for the projects.

This year’s group scoffed at the back of the 2007 T-shirt which said: “We mapped in snow, hail, sleet, rain, and the scorching sun while walking UP THE MOUNTAIN. What did you do at your field camp?” “2008 was MUCH worse – HAH!” The course was challenging, but all agreed that it was an exceptional, fun, and intense experience. A new crop of field geologists is ready for their careers, armed with amazing but true field camp stories!

The Department has sent twenty one geology students to various field-based geology opportunities over the past six years. These summer field courses, and an array of shorter fieldtrips during the semester, are absolutely necessary for setting the field context for both coursework and for professional success. We surely appreciate the financial support of alumni that allows for such important experiences. Thank you!!



WKU geology folks at the Whitewood Peak field area (from left: Robert Moore, Chelsea Brunner, Dr Andrew Wulff, Seth Cude, and Isaaah Land)



Development of the Kentucky Mesonet Continues.....

By Stuart Foster and Rezaul Mamood

Faculty, staff, and students with the Kentucky Climate Center continue working to cover the Commonwealth with an infrastructure for environmental monitoring that provides valuable data in near real time to a wide variety of users. Funding to build the Kentucky Mesonet is provided through the National Weather Service via an earmark secured by U.S. Senator Mitch McConnell. Total funding through 2009 will reach approximately \$2.5 million. The Kentucky Mesonet not only serves the people of Kentucky, it also provides unique opportunities for engaging students from across Western Kentucky University’s campus, and it is a key asset to the Department of Geography and Geology’s emerging B.S. Meteorology program.

Site Identification:

Efforts are ongoing to identify sites for Mesonet stations that satisfy scientific criteria, while providing benefits to local communities. Site identification and

selection is based on a combination of terrain and land use analysis using Geographic Information Systems (GIS) and on-site surveys. Mesonet representatives have worked closely with emergency managers, agricultural specialists, and other local officials in counties throughout Kentucky in order to help identify quality sites.

Recently Added Stations:

As of August 31st, ten Mesonet stations are operating. Each station records air temperature, relative humidity, solar radiation, wind speed and direction, and precipitation. Observations are recorded every five minutes and transmitted via a digital wireless network back to the Mesonet's operations center in Bowling Green. Information about the most recently added stations is provided below. In addition to the stations currently operating, installation work has begun at eight new sites, with a growing backlog of stations to be completed over the next year.

Columbia, Adair County:



Installation of a new Kentucky Mesonet station was completed on May 13, 2008, at a site near Columbia, in Adair County, at the Green River Commerce Park, jointly managed by the Adair County Fiscal

Court and the City of Columbia.



Clermont, Bullitt County:

Installation of a new Kentucky Mesonet station was completed on May 22, 2008, at a site near Clermont, in Bullitt County, on property of the Bernheim Forest

and Research Arboretum.

Lexington, Fayette County:



Installation of a new Kentucky Mesonet station was completed on June 6, 2008, at a site in southwestern Lexington, in Fayette County, at the University of Kentucky

Horticulture Research Farm.

Leitchfield, Grayson County:



Installation of a new Kentucky Mesonet station was completed on July 2, 2008, at a site near Leitchfield, in Grayson County, on property owned by the Grayson County Board of Education

National Weather Service:

The Mesonet makes near real-time operational data available to National Weather Service (NWS) Forecast Offices (WFOs) serving the Commonwealth. Mesonet IT staff have been working with staff of the Jackson, KY, WFO to develop a data-access solution that allows project data to be displayed directly within the Advanced Weather Interactive Processing System (AWIPS), the cornerstone computing system of the NWS. This solution will allow forecasters to access project data in critical weather situations from within their native computerized meteorological analysis environment. Such direct access will promote top-of-mind awareness of the project within the NWS and will promote the Mesonet's goal of benefiting the citizens of the Commonwealth.

Even in its developmental stages, the Mesonet has already proven valuable to the weather service in forecasting, reporting, and severe weather operations. Project data have been used to help forecasters adjust for changing conditions, evaluate sub-zero temperatures in an arctic blast, determine whether to issue severe thunderstorm warnings, and verify storm reports.

Public Data Access and the Workshop:

The general public can now access both current and historical weather data via the Kentucky Mesonet's website (<http://www.kymesonet.org>). This website was launched in January 2008, providing current and historical weather data along with background and technical information about the Kentucky

Mesonet.

We are also going to host the 'Kentucky Mesonet Workshop' October 7-8, 2008. The workshop will provide a great opportunity to engage a wide variety of stakeholders who use meteorological and climatological data for decision making.

KENTUCKY MESONET The Commonwealth's Official Source for Weather and Climate Data

Home About Integrity Sites Historical Data Consortium Initiatives

Warren County, KY
Bowling Green 5 S

Dewpoint: 68°F
Humidity: 53%
Precipitation: 0.00 in. (SINCE 12AM)
Wind: WNW at 13 mph

88°
1:15 pm CDT (make default site)

Air Temp. (°F)
1:15pm CDT
8/29/08

Click map to change site

73 85 86 87 88 89

Temps | High/Low | Precip | Wind | S. Rad. | Humidity | Dewpoint | Heat Index

Site Progress

NEWEST PLANNED

GRAYSON CO. FRANKLIN CO.

Highest Temps
Last 24 Hours

Hartford 3 E:	91.9°F		
Shepherdsville 6 SE:	91.4°F		
Bowling Green 5 S:	90.2°F		
MAXT	MINT	PRCP	WIND

Western Kentucky University - Kentucky Mesonet - 1906 College Heights Blvd #31086 - Bowling Green, KY 42101 - (270) 745-4567 - kymesonet@wku.edu

WKU Team Assists Nigerian Government with Cave Protection and Tourism Development

A joint Western Kentucky University Folk Studies/Geography team travelled to Nigeria in October to study and help protect cave systems and develop tourism in the country's rural southeast. The WKU group, led by Folk Studies Associate Professor JAK Njoku, is cooperating with Nigeria's National Commission on Museums and Monuments to explore and document several caves, including the Ancient Cave Temple Complex of Arochukwu, in Abia State near Nigeria's border with Cameroon.

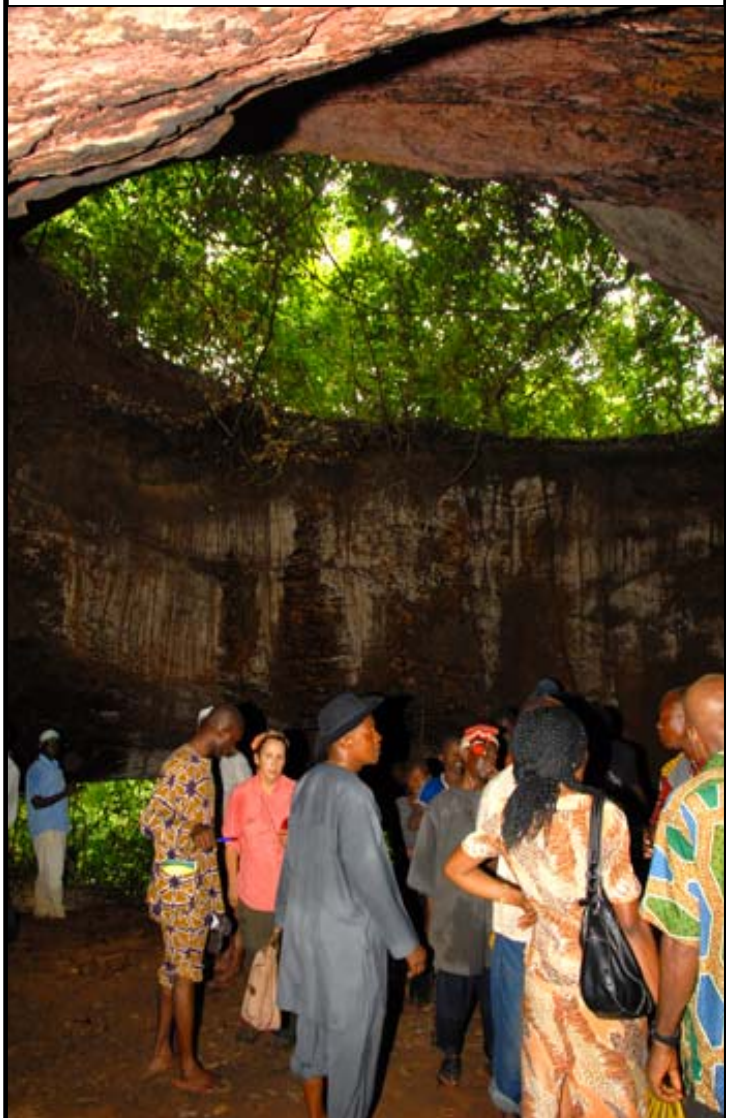
Dr Njoku was joined by Chris Groves and Pat Kambesis of the Hoffman Environmental Research Institute within WKU's Applied Research and Technology Program. An important goal of the group's effort is to gather documentation on the cave and its history of utilization to support an application, in collaboration with the Nigerian government, to protect the site under the auspices of the United Nations' (UNESCO) World Heritage Program.

Dr Njoku, whose research documents routes by which Africans were brought from the Nigerian interior to the coast as they were sent into slavery, learned in 2004 about the Arochuckwu Cave Temple Complex. The complex contains the "River of Blood," and thousands of Africans may have been hidden within the cave on the way to be sold into slavery. Unfortunately, after reaching the small village near the cave after a 10-hour drive from the country's capital, the tribal king there told the group that due to considerations of traditions following several deaths in the village in the days preceding the visit, a trip to the cave was not possible at the moment and the group was invited to return at another time.

The group then explored another cave in the region, called the House of God, which had beautiful natural bridges, large bats and, according to the local tribal chief who led the group to the cave, a giant python that fortunately did not appear during the visit. The group also learned that during the Nigerian (Biafran) Civil War in the late 1960s, thousands of local residents hid in the caves there for protection.

The WKU team was organized last year after Dr Renae Speck of WKU's Office of Sponsored Programs (OSP) recognized the potential synergy between Dr Njoku and the Hoffman Institute within the

Department of Geography and Geology, whose members have extensive international experience in the mapping and resource evaluation of significant cave systems, as well as experience with UNESCO scientific programs. The goals of the current phase of the effort are to enhance existing relations between WKU and various national, state, and local Nigerian government and tribal entities, as well local residents in the vicinity of the Cave Temple Complex, and to gather sufficient information to apply to external funding agencies for support of a major joint US/Nigerian expedition to survey and document the site in preparation for application to UNESCO for "World Heritage" status.



Geology Faculty Lead Successful KSPG Fall Field Conference

The fall 2007 KSPG (Kentucky Society of Professional Geologists) field conference was run almost entirely by geology faculty from WKU. The conference was quite well attended and Ken Kuehn, Mike May, Fred Siewers, and Andrew Wulff contributed yeoman effort to make every aspect of it a success. The fieldtrips were effectively split into two trips, each centered on aspects of south-central Kentucky. The first day (Friday, Sept. 14) concentrated on Mississippian stratigraphy, geomorphologic features, and karst resources around Bowling Green, KY. Included was a bit of the history of economic development of some of the region's resources including oil and limestone (as aggregate and dimension stone), and a guided tour of a hot mix asphalt (HMA) manufacturing and testing facility. Jared Nix of Scotty's Contracting and Stone led a fine tour, which included several former WKU engineering students who had taken their Geology coursework from faculty present! There was exceptionally high participation by undergraduate geology students from many area universities, and WKU was certainly very well represented. The banquet that night included remarks from Andrew Wulff (President of KSPG) and David Keeling (Geography and Geology Department Head).

The next day (Saturday, Sept. 15) included an extended trip to the Kyrock region to consider some of the fascinating history and future development of this area. Edmonson County hospitality was on display at the pig roast feast for lunch and concluded with the recognition of Kyrock as the 4th Distinguished Geologic Site in Kentucky and presentation of commemorative plaques. Mike May did the groundwork and wrote the nomination of the Kyrock region, and Andrew Wulff made the presentation, as President of KSPG, to Larry "Butch" Carroll, Clerk of Edmonson County at the historic Carmichael house. There has been considerable recent interest in the development of the Kyrock area, and it is certainly a credit to Mike and Ken that it will be recognized that WKU and KSPG early on saw the past and future importance of this site. The rest of the day centered on

Mammoth Cave National Park, including a guided tour by Rick Toomey. The field guide will be online soon. The conference this year was coupled with the yearly meeting of the Eastern Section AAPG (American Association of Petroleum Geologists), which brought quite a national, and even international, flavor to the conference, and good recognition to the department here at WKU.



Ken Kuehn regales the group with analysis of the landscape



Historic Kyrock, Kentucky

FACULTY ACTIVITIES

KATIE ALGEO enjoyed an interesting and productive year during 2007-2008. She introduced a new course, Tourism Geography, to help students develop a critical understanding of the scope and nature of modern tourism, historical antecedents, such as religious pilgrimages and the Grand Tour of Europe, impacts (both good and bad) that tourism has on places, and what it means to be an ethical tourist, among other topics. She also took what had been a 200-level course, Geography of Food and Agriculture, and upgraded it to a 400-level course to illuminate current food issues through reading, discussion, and local field work. One highlight of the course was an excursion to Bowling Green's SKY Farmers Market to investigate what it means to eat locally here in Bowling Green. The small, but enthusiastic class also enjoyed outings to sample local ethnic cuisine. Other courses that Dr Algeo taught this year include Geographic Information Systems (including an on-line section), Cultural Geography, a new graduate-level seminar in Cultural Geography, and another one in Historical Geography.

It was a busy year on the research front as well. Dr Algeo was selected as one of a small number of American participants in the Quadrennial Anglo-American-Canadian Rural Geography Conference held during July 2007 in Spokane, Washington, and western Idaho. She presented a paper on the prospect of using digital technologies to recover and foster public memory of the roughly dozen communities that existed near Mammoth Cave before the National Park was created. Two WKU graduate Geoscience students are playing important roles in this project. Matt Brunt has been instrumental in constructing a historical GIS from the 1920 manuscript census of Edmonson, Barren, and Hart Counties for the park area. This decennial census is a critical document, for it was the last census taken before land began to be purchased for the park and its residents moved out. Thus, it is the most complete record of what the pre-park communities were like. The manuscript census consists of the original documents recorded by census takers and shows a wealth of information for every

household, in fact, almost everything needed for geospatial analysis – except a street address or other form of location! Street addresses simply were not in use in rural parts of the U.S. in 1920. So, Matt and Dr Algeo have been using a variety of geosleuthing techniques to match census household data with the known locations of houses. The pair made a preliminary presentation of the historical GIS at the annual Mammoth Cave Homecoming in July 2008, an event when many former residents and their descendents return to the park to socialize, swap genealogical information, and remember the way things used to be. Ann Epperson is the other graduate student involved with the project. Ann will be putting her internet GIS skills to work in creating a web-based interface to the Mammoth Cave GIS and exploring how the census data can be supplemented with other forms of data, such as photographs and letters, gleaned from a public participation process, to create a virtual site of public memory for the pre-park communities.

Dr Algeo will be extending her research into the culture history of Mammoth Cave National Park during her sabbatical for the coming year, with the goal of writing a book about the cave. That project has taken her on several research trips during summer 2008 to the Kiplinger Library at the Historical Society of Washington, DC, which houses a collection of letters and business papers from the extended family that owned the cave for over three quarters of a century before it was turned into a national park. While Dr Algeo appreciates the convenience of modern telecommunications, she is infinitely grateful that email did not exist and telephone existed for only a fraction of the period she is studying, forcing this family to commit to paper their goals, plans, and machinations for managing Mammoth Cave. She is also duly grateful for the packrat mentality possessed by several family members that ensured the preservation of so many illuminating and mundane documents.

Though Dr Algeo spends much of her time thinking about Mammoth Cave these days, she has also found time to serve as the treasurer of SEDAAG (the Southeastern Division of the Association of American Geographers), serve on the board of The Friends of Dumont Hill, a Civil War site located in Scottsville, Kentucky, that is in the midst of

preservation, present papers at several conferences (“Indian for a Night: Sleeping with the ‘Other’ at Wigwam Village Tourist Cabins” at the Pioneer America Society and “National Parks and the Inversion of Appalachian and Hill Country Stereotypes” at SEDAAG), and to start work on a new cultural geography textbook with several colleagues at other universities. Because of her sabbatical, Katie won’t be in her office as much during the 2008-2009 year, but she invites all friends and former students to drop her an email from time-to-time and let her know how you’re doing.

JOHN ALL was awarded tenure and promoted to Associate Professor this year and looks forward to many more productive years at Western. His environmental geography course-load was rewarding this year and his global climate change class grows more timely every year. Dr All was a guest speaker for Focus the Nation – a nationwide program to provide information and focus attention on climate change. Several students working with Dr All using remote sensing to study climate change and sustainability presented research at various conferences. John had manuscripts published in the *Southeastern Geographer* (with a former graduate student) and *Natural Resources Forum* (a UN publication), and had an article accepted by the *Geographical Bulletin* with another former student. He has several projects on-going in Africa, Bhutan, and Chile with publications moving forward. Dr All organized an international symposium on Climate Change and Human Health with speakers from around the world for the American Association for the Advancement of Science (AAAS) annual meeting convened in Boston and had over 100 attendees.

John spent both Christmas and the summer in Romania with Narcisa as they planned for a formal Eastern Orthodox church wedding in August. It was an incredible event with family coming from everywhere and all staying in one house (for reference, see the movie *My Big Fat Greek Wedding*). John isn’t quite sure what he swore to do

during the ceremony, but everyone assures him it has nothing to do with vampires.

The coming year looks exciting as John will be working with Habitat For Humanity in Bowling Green to plan a ‘Eco-Village’. He also has been asked to write entries on climate change adaptation, on climate change impacts, and on global environmental change for the *Encyclopedia of Geography*. Finally, several of his graduate students SHOULD be finishing up this coming year – next year’s GEOGRAM will tell the tale.

WILL BLACKBURN had many educational adventures this past year. He participated in a study abroad program with Ms Debbie Kreitzer and Dr David Keeling. He aided in the planning, promoting, and recruiting for a trip to the northeastern Mediterranean Sea region. This program offered a four-week student engagement experience that introduced students to the culturally diverse world of Turkey, Greece, Italy and Slovenia. While in the region, the students had the opportunity to see and learn the similarities and differences that exist



between the peoples and the physical landscapes. They saw many of the great architectural achievements of the Romans, Turks and Greeks, sampled regional foods, heard different languages and experienced the hospitality of the people. These travel opportunities are the learning adventures of a lifetime and Will is dedicated to the notion that as many students as possible need, should, and deserve to have this kind of experience while they pursue their education at Western Kentucky University, “A Leading American University with International Reach.”

Professionally, these programs are great development opportunities for participating faculty. Will takes his travel experiences back to the classroom and shares this engagement with all his students. The first-hand knowledge from these travels lends tremendous credibility to the lectures presented to our students. The shared learning promotes future study abroad programs by letting the students see how these opportunities can be

personally feasible. The students come to realize that they too can participate. The study abroad programs are a win, win, win situation and Will feels privileged to take part. He would like to publically thank his wife and daughter for their patience and understanding for the long separations.

Other professional development for the year included an exploration of eastern and western Kentucky, a field experience in New England, and an engaging conference at the annual meeting of the Association of American Geographers. All these travels benefit Will but, more importantly, they benefit the students by increasing Will's teaching effectiveness. It's a tough job, but someone has to do it.

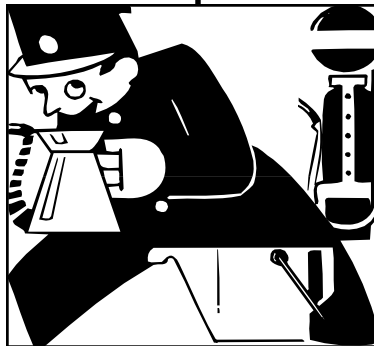
Will continues to represent the Department at the Glasgow campus. He advises and recruits students that may otherwise not be introduced to Geography. As part of the Glasgow family and serving the Bowling Green campus, Will sometimes pulls double duty, but the work is well worth the opportunity to interact with both communities. Will is happy to welcome Amy Seymour to the Glasgow team. He looks forward to collaborations that will enhance the geoscience offerings at Glasgow and generally promote the science of geography. Welcome Amy.

On the personal front, Will's family continues to thrive. Stephanie, Will's wife, still cares for the babies in the nursery at the hospital. Babies she cared for in the past are starting to have babies. Depressing - but life marches on. Abby, Will's daughter, still rides and shows horses as much as possible. Abby also plays soccer, basketball, and made the middle school volleyball team this year. Abby's grandmother still complains the girl does too much.

KEVIN CARY writes that it's been another exciting year and he's looking forward to his eighth year in the Department. He's been working on three projects that are making an impact: The Blueways of Warren County, KY, WKU's Emergency Telecommunication Warning System and GIS training

in Bogotá, Colombia.

The Center for GIS partnered with the Department of Physical Education and Recreation to develop an online dynamic map of the blueways in Warren County. The online map is available at <http://www.wku.edu/blueways> and showcases access points and view points along a stream that can be paddled. Both the access points and view points are hyperlinks detailing additional information about the stream at that particular location. The hyperlinks for the access points launches a webpage that includes mileage to the nearest access point up and downstream and pictures of the surrounding area, giving the paddler an idea of the stream's condition; the view point hyperlinks only show pictures. At various scales, the Internet mapping site activates relevant layers of interest about the area, such as labels of the roads and a hill shade effect. Kevin is a canoeist himself and has noticed this year an increase in canoeing in Warren County. He can't determine if it is a function of the new website, the new "stay vacation," or both.



In February, Kevin traveled with Department Head David Keeling to Bogotá, Colombia, to evaluate the existing GIS capabilities of GEOSCIRE and CERAC as part of a

grant associated with the AGS Bowman Expedition project (<http://www.amegeog.org/bowman-expeditions.htm>). It was his first time in Colombia and he had overall a very good experience. He looks forward to going back to check on their progress and to enjoy the good food and coffee that Colombia has to offer. Over the summer, Kevin spent time training various personnel from both organizations.

During the spring, WKU's Telecommunications Division approached Kevin about setting up the mapping application portion of its new simultaneous calling system. The mapping application allows the user to select buildings and other features spatially through web mapping tools to identify the appropriate telephone numbers for calling. The user then records a voice message that the system will use after simultaneously dialing all telephone numbers in selected buildings.

Beginning in September, Kevin will serve as a GISCI (<http://www.gisci.org/>) reviewer for GISP applications. This relatively new program is designed to recognize expertise in GIS. To be considered, a person must have at least four years of on-the-job experience in GIS. In addition to experience, GISPs have met a threshold in a point system in the areas of education achievement and contributions to the profession. Kevin has had his GISP since 2005.

At the homestead, his son Andy (Scott Andrew) started 1st grade and he's currently playing the position of goalkeeper with his soccer team. Kevin grew up playing soccer, but played mostly as a midfielder. As a result of keeping up with his son, he's been biking to work in attempt to get back in shape.

MARGARET CROWDER

has had an exceptionally full and rewarding academic year. She continues to work on engaging students both in and out of the classroom, while performing myriad public service and P-12 outreach activities. Margaret was honored to be the recipient of the Ogden College of Science and Engineering Outstanding Faculty Award for Public Service for 2008, as recognition for her work.

Outreach activities this year for Margaret included teaching Hollywood Geology as an offering for 4th and 5th grade students participating in the Center for Gifted Studies Super Saturdays program, a session called Volcano! for the Women in Science and Engineering sponsored Girls in Science Day, and a summer VAMPY course in Geology and Oceanography for gifted 8th-11th graders. Margaret also created the Oceanography section exams for the Kentucky middle and high school Science Olympiad competitions held at WKU. Margaret engaged current Departmental undergraduates (and one alumna) for experience assisting in each of these activities.

At the college level, Margaret continued to teach Introductory Geology courses, in addition to Oceanography, Geology and Cinema, and an Honors Colloquium course in Global Climate Change. She led a small group of her Honors

students on a trip to the Geological Society of America's annual meeting in Denver. While there, students attended technical sessions dealing with climate change issues.

Margaret also continues to be involved in Science Education initiatives at WKU. She is part of the Science Alliance, is a member of the steering committee for SKyTeach, a program designed to create more and better science and math educators in Kentucky, and is involved in potential revisions to Earth Science courses in elementary education.

Community service is still vital in Margaret's life. She serves on the Simpson County Democratic Executive Committee and is the trained, volunteer SAFER (Safety Assessment for Evaluating Rehoming) dog evaluator for the Simpson County Animal Shelter. She is also halfway through her term on the Session (the governing body) of the Franklin Presbyterian Church, where she is also a member of the Outreach Committee, and serves as an elder.



SCOTT DOBLER has completed his eighth year at Western Kentucky University. This past year was a very productive one in regards to public service. He has continued as the co-coordinator of the Kentucky

Geographic Alliance (<http://www.kga.org>). The KGA is funded by an ongoing grant from National Geographic to support the development of geography awareness in and outside of the classroom.

During this past year Scott's KGA focus has been toward developing a number of products. The first product is an online Atlas of Kentucky that can be used in the K-12 classroom. Eventually this atlas will also be developed and printed with appropriate lesson plans. A second product will link the Commonwealth Accountability Testing System (CATS) scores to a spatial database in order to visualize the results of KERA in Kentucky. This product will list content level scores at the regional, district, and school level, and will be available later this year.

Scott has teamed up with the Kentucky Mesonet (<http://www.kymesonet.org/>) to help K-12 teachers use local meteorology data in their classrooms.

This past year, the KGA and Mesonet worked together to develop lesson plans in the content areas of social studies, science, and math. The lessons have been digitized, and rendered for use in conjunction with the Kentucky Mesonet website. Teachers will be able to use real-time data in their school from the Kentucky Mesonet, while following teacher-developed lesson plans. These plans will be introduced to teachers in a number of state-level meetings.

This past year he presented at a number of state and national meetings:

- Kentucky Academy of Environmental Educators
- Kentucky Council for Social Studies
- Kentucky Science Teachers Association
- Kentucky Academy of Science
- Association of American Geographers
- Environmental Systems Research Institute (ESRI) convention

In the year to come, Scott will be working with state and local educators to help implement Geographic Information Science (GIS) in schools. He will also be searching for matching funds (up to one million dollars) to create an endowment for the Kentucky Geographic Alliance. If you have any ideas or suggestions (or money), please contact Scott (scott.dobler@wku.edu)..

STUART FOSTER remained active in his role as state climatologist and director of the Kentucky Climate Center. In the aftermath of last year's severe drought, Stuart was a featured speaker at the Southeast Drought Summit held in Nashville, where he addressed a group of public and private sector water systems professionals. He was also invited to speak on droughts, floods, and everything in between at the Interstate Environmental Health Seminar held in New Bern, North Carolina.

Dr Foster was invited to serve on the Kentucky Division of Water's Drought Response and Mitigation Advisory Committee that has been tasked with developing a new drought plan to help Kentucky deal effectively with future droughts. In addition to concerns about possible climate change, increasing demand for water by a growing

population and economy will enhance the risks associated with drought in areas throughout the Commonwealth.

Drs Foster and Rezaul Mahmood received nearly \$700,000 of additional funding through the National Weather Service to continue development of the Kentucky Mesonet. Current weather conditions from numerous automated observing stations around the Commonwealth can now be found on the Internet at <http://www.kymesonet.org/>.

Earlier this summer, Drs Foster and Mahmood "interpreted the landscape" as they journeyed to Burlington, Vermont, for the annual meeting of the American Association of State Climatologists, where they provided an update on the Kentucky Mesonet.

GREG GOODRICH writes that growth of the new B.S. Meteorology degree program was his primary focus in 2007-08. The WKU Meteorology program is the only such program in Kentucky and Tennessee and fulfills all requirements of both the National Weather Service and the American Meteorological Society. Enrollment in WKU Meteorology has far exceeded expectations, as more than 40 new students will begin the curriculum in Fall 2008. As part of the new curriculum, Greg introduced a new course in Fall 2007, Meteorological Instruments (GEOG 325). The course was set up so that students learned the theory behind each of the instruments used in the Kentucky Mesonet. The course was very hands-on as students were also responsible for setting up the tripod, data logger, and instruments and were required to write a group lab report for each lab exercise. In addition to GEOG 325, Greg also introduced an Honor's section of Meteorology (GEOG 121). The class was evenly split between incoming Meteorology majors and other honors students. Students were introduced to map discussions and map analysis as well as the basic concepts of atmospheric science. He also taught sections of Intro to the Physical Environment (GEOG 100) and Synoptic Meteorology (GEOG 432). Greg received his first teaching award last year when he was named the Phi Eta Sigma "Professor of the Year." Phi Eta Sigma is a

freshman honor society at WKU.

Greg continued to successfully advance his research program of investigating the relationship between low-frequency variability of the ocean/atmosphere (also known as teleconnections) to drought and precipitation patterns. He published five peer-reviewed articles in geography (*Focus on Geography*) and climate journals (*Climate Research* (twice), *Monthly Weather Review*, *Journal of Applied Meteorology and Climatology*) and one peer-reviewed conference proceeding (*Proceedings of the 2nd Fire Behavior and Fuels Conference*). The articles investigated how climate tele-connections relate to various things such as wine quality, forest fires, snowstorms, drought, and extreme precipitation. He now has twelve peer-reviewed journal articles since arriving at WKU in 2005 and fifteen overall. He made presentations of his research at seven national and regional conferences and submitted three grant proposals to NOAA and NSF. During Fall 2007, Greg's GEOG 475 climate research group, made up of four undergraduate students, analyzed historical drought in Kentucky and Tennessee. This research was the basis for an invited talk Greg gave at the annual meeting of the KY/TN Water Professionals Conference in Knoxville, TN in July 2008. In addition, Greg brought his first graduate student, John Walker, to the completion of his Masters in Geoscience.

Finally, Greg continues to write about Kentucky weather in the "WKU Meteorology Blog" which can be found at <http://blog.wku.edu/~gregory.goodrich/>. The blog has received over 600 visits per month and over 1500 pageviews per month since it was started in February 2007. The blog also contains information about the new B.S. Meteorology degree program as well as dozens of links to weather and climate websites.

CHRIS GROVES, along with his students and colleagues, faced a year of both challenges and opportunities with the ongoing work of the Hoffman Institute, including implementation of the second year of the *China Environmental Health Project (CEHP)*, made possible with a grant from the US Agency for International Development with the support of

Kentucky's Senator Mitch McConnell. The WKU team made numerous trips to China. In early 2008 a group travelled to Southwest University in Chongqing with an international team of cave-mapping experts and held a week-long workshop on data collection methods for karst hydrogeology, including safe mountaineering skills used to negotiate deep pits that commonly occur in SW China. This was then followed by a training expedition to a dry karst plateau in Yunnan Province, close to the border with Vietnam, where the Chinese gained expedition experience. The teams made progress in understanding the plateau's hydrogeology that might allow better access to water for the tens of thousands of minority nationality residents there.

Other activities included a week-long CEHP academic workshop in karst hydrogeology in October at Southwest University, where karst practitioners from WKU and other universities in the US, China, Belgium, and Switzerland discussed theoretical and applied aspects of karst water resource development for a focused group of 40 graduate students and broader lectures attended by up to several hundred undergraduates. Several Hoffman graduate students worked on other field projects in Chongqing, including Erin Lynch



who safely shook through May 2008's devastating earthquake in adjacent Sichuan Province at a location less than 200 miles from the quake's epicenter. Chris travelled to China in December to discuss CEHP efforts in public environmental education at the Asian Environmental Compliance Enforcement Network conference in Beijing, followed by a visit to Anhui Province in eastern China, where the CEHP collaboration with the Anhui University of Science and Technology studies air quality associated with coal combustion.

Chris was also kept busy by the United Nations' International Geoscience Program project *Global Study of Karst Aquifers and Water Resources*, on which he serves as Project Leader, and which got an "excellent" rating by a UNESCO review panel for the year's efforts. He organized and attended the year's primary project meeting at the International Geological Congress in Oslo, Norway, with

presentations on research and water development work in China and Kentucky.

In a new initiative with Professor JAK Njoku of WKU's Department of Folk Studies and Anthropology, Chris travelled with Pat Kambesis and Professor Njoku to Nigeria, where they explored and gathered information on caves associated both with the Atlantic slave trade and local religious traditions. Emerging from one cave called the "House of God" the local tribal chief explained to the team that prayers he had given before we walked through the forest to the cave had successfully kept the large python that lives in the cave from coming out to kill us.

Closer to home, Chris and his colleagues worked on USDA-funded research to better understand agricultural contamination of karst groundwater, and have nearly worked through the extensive legal and other administrative tangles associated with the purchase of Crump's Cave in northern Warren County, made possible by a state grant that he wrote in 2006 with Pat Kambesis and Albert Meier, and which will be an educational facility for the study of Kentucky karst resources.

Outside of the Department, Chris and Deana neared completion of their new home in the wilderness west of Bowling Green, and enjoyed their two daughters Lillian and Leah.

PAT KAMBESIS reports that, in addition to teaching Geog 316 last Fall, she travelled to several far-flung places in the world, all related to karst and cave research. Pat and Dr Groves, along with their colleague Dr. Jak Njoku (Department of Folk Studies and Anthropology) spent six days in southern Nigeria on a reconnaissance trip to evaluate caves and karst resources for World Heritage status. Kambesis began work in Haiti for the country's Ministry of Tourism to assess cave potential for ecotourism in the southwest part of the country. She participated in the NSS Cuba Caves Project's expedition to Sancti Spiritus, Cuba, to document and assess caves and karst features in Caguanes National Park, located on the north central coast of the island.

In January 2008, she did fieldwork in support of a research project on a morphometric analysis of coastal

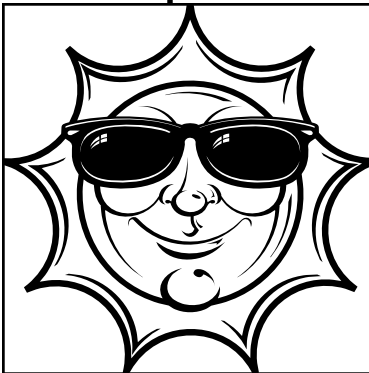
caves of Puerto Rico. She also worked on an ongoing hydrologic field project on the Tanama River, located in the North Coast karst region of the country. In February 2008, she participated in a National Geographic-sponsored field expedition to the country of Laos, documenting what may be one of the largest (in terms of passage size) river caves in the world. In March, she participated in the Hoffman Institute's China Environmental Health Project, leading an expedition to the Mengzi plateau in south China in search of subterranean water sources for local villages. She also ran a field methods training session at Southwest University in Beibei, China.

In May, she participated in the week-long National Cave Rescue Training seminar in Mentone, Indiana, attaining Level II status. In May/June Pat, along with Dr John All and Narcisa Pricope, spent eight days on Isla de Mona (Puerto Rico) doing resource inventories and cave surveys for the Puerto Rico Department of Natural Resources. Since the merger of the Center for Cave and Karst Studies with Hoffman Institute, Pat has taken on the responsibility of administering the WKU/Mammoth Cave National Park's Summer Field Studies Program. All seven course offerings enrolled this year, including her course on Cave Surveying, Cartography, and GIS.

In August, Pat, along with four WKU students attended the 2008 National Speleological Society's annual convention, this year in Lake City, Florida. Kambesis and students presented several papers and chaired sessions in US and international exploration.

DAVID J. KEELING reports that his fifteenth year in the Department, and seventh as Department Head, continued to generate challenges, excitement, some great international trips, several informative conferences and workshops, and hard-working students to keep him extremely busy.

As expected, travel continued to dominate Dr Keeling's professional and personal life, and over the course of the past year he enjoyed several marvelous research and lecture trips to the four corners of the planet. In May 2007, Dr Keeling traveled to Britain to



continue research on urban and rural transport networks. In July and August he journeyed to Alaska, Siberia, and the Arctic to lecture for the American Geographical Society on one of its many educational programs to the far-flung corners of the planet. After regional trips to New York and Lawrence, KS, for meetings related to ongoing research for the Bowman Expedition Colombia project, he again joined an AGS educational expedition from Casablanca to Cape Town in November, lecturing on environmental, geopolitical, and socio-economic issues in western Africa.

Quick trips to New York and London, England, for meetings in December were followed by three weeks in the Yucatán with colleagues from the Sociology Department and thirty students on the annual Winter term study abroad program. In February, Dr Keeling took advantage of his Spring semester sabbatical leave to visit Cambodia, Malaysia, and Singapore and learn more about recent trends in transport network development. Five weeks in Europe followed in March and April, with lectures at Plymouth and Salford universities and research in Spain and France on rail system development. Two trips to Bogotá, Colombia, in February and April as part of the Bowman Expedition research bracketed a visit to Boston, MA, to present research at the annual conference of the Association of American Geographers. The academic year ended with the annual summer study abroad program, this year to the eastern Mediterranean—news about this program can be found elsewhere in this year's GEOGRAM!

Dr Keeling participated in several conferences and workshops during the year. At the beginning of the 2007-08 academic year, he participated in Western's Engaging the Spirit workshop, discussing how to engage students in landscape analysis. In October, he journeyed to Ft. Leavenworth, KS, to participate in a workshop on the AGS Bowman Expeditions. In April 2008 he attended the annual Conference of the Association of American Geographers in Boston, where he participated in a workshop session on writing and publishing Op Eds on geographical topics.

Within the community and on campus, Dr Keeling gave several talks on issues ranging from global oil production to Arctic environmental issues, and on

Finland, the Sahara, and west Africa generally. He appeared several times on WKYU-FM's MIDDAY Edition—his 29th appearance on this forum featured a discussion about the recent Russian claims to Arctic territory. Dr Keeling also gave a presentation on the Sahara at Barnes and Noble, and contributed lectures to a number of departmental courses. Dr Keeling continues to serve as a National Councilor for the American Geographical Society, and as the webmaster for the Society (visit www.amergeog.org).

As Department Head, Dr. Keeling still attended way too many meetings during the year, but managed to contribute to the ongoing Leadership Studies program (www.wku.edu/leadership) and to international education on campus. Despite the administrative load, Dr. Keeling still found time to write and publish research—this past year his second review article on regional transportation appeared in the international journal *Progress in Human Geography*. He also completed an article on Latin American transport challenges that will be published in Fall 2008, published an Op Ed commentary in the *Honolulu Hawaii Reporter*, and revised an article on Buenos Aires for the online *Encyclopedia Britannica*.

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>.

DEBRA KREITZER writes that the 2007/2008 school year was another exciting and productive one, as she spent another very industrious year teaching, researching, traveling, and planning new geographical experiences. Debbie is involved in teaching the *Fundamentals of GIS*, *Geography of North America*, *World Regional Geography* and the *Professional Preparation* class for outgoing seniors. This year she also is teaching *Cultural Geography* and two online courses for Independent Learning; *World Regional Geography* and *Natural Resource Management*.

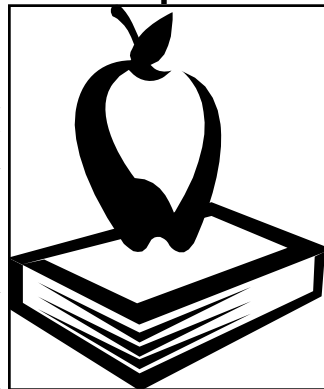


In January 2008, Debbie and Dr Keeling, along with Dr Holli Drummond of the Sociology Department, took 30 students to Mexico to study the geography and sociology (along with a little history) of the Yucatán Peninsula. The Department and the University are committed to providing opportunities for students to travel abroad as WKU becomes a "leading university with international reach."

Along with the other faculty in the Department of Geography and Geology, Debbie is also dedicated to professional development by attending research conferences and meeting with experts and colleagues in the field of geography. In April she attended the annual meeting of the Association of American Geographers (AAG) in Boston, MA, where she presented a paper with her colleague Amy Seymour. Of course geographers who attend conferences out of town are "required" to go on field trips. Boston and the surrounding area, including New Hampshire and Maine offered many exciting opportunities for geographic observation.

In May/June, Debbie, Will Blackburn and Dr. David Keeling took 10 students to the Mediterranean countries of Turkey, Greece, Italy and Slovenia. This study abroad opportunity offered students the chance to be exposed to a variety of cultures. In this region the group examined economic development, land-use, and natural resource issues that are shaping these countries. Students also learned valuable lessons about Islam, the European Union, and the importance of transportation. If any of you are interested in participating in one of our study abroad programs or in supporting a student on a study abroad trip, please send an email to <debbie.kreitzer@wku.edu>.

KEN KUEHN completed his 24th year at WKU and, owing to some recent retirements, has reluctantly just become the senior full-time faculty member in the Department! Last Fall, he was co-developer and leader, along with Dr Mike May, of a joint field conference for the American Association of Petroleum Geologists (AAPG) and the Kentucky Society of Professional Geologists (KSPG) that emphasized the limestone and hydrocarbon resources of our region. The two-day event included visits to a



modern limestone aggregate quarry, an asphalt mix plant and testing lab, a newly-reopened natural rock asphalt quarry, Mammoth Cave National Park, and the designation of Kyrock, Kentucky (Edmonson County) as a KSPG Distinguished Geologic Site. Drs Fred Siewers, Andrew Wulff, and Rick Toomey also had roles in the conference, so it was truly a WKU Geology production - and a very successful one! You can read a complete summary in the most recent KSPG Newsletter online: (www.kspg.org). Ken also co-authored the two guidebooks for the field conference that will be available online shortly: *Geology of the Mammoth Cave and Nolin River Gorge Region with Emphasis on Hydrocarbon and Karst Resources, Part I: Geomorphology, Stratigraphy, and Industrial Materials*, and *Part II: Rock Asphalt Redux and Paleovalleys Anew*.

Ken penned an article for Kentucky Geologists titled *Raising Our Professional Profile to Meet Today's Challenges*, which is available online through the Kentucky Board of Registration for Professional Geologists website. He also served on the Association of State Boards of Geology (ASBOG) Council of Examiners as an item writer for the national exam. The ASBOG exam is required for professional registration in Kentucky and as Geology alumni should already know, professional registration is required in order to practice here.

Other research efforts included his co-authorship of the following professional papers presented this past year: *Geology of the Kyrock and Nolin River Gorge Region, Edmonson County, Kentucky* (with Dr May), *GIS Modeling Applications in Petroleum Exploration* (with Geoscience alumnus Joe Islas), and *The Bowling Green Oolite: An Important Building Stone of the Late 19th and Early 20th Centuries* (with Dr May).

Ken and Geoscience graduate student Nathan Rinehart continued on their funded research with the National Park Service to analyze natural resource and watershed conditions in two parks, one in Kentucky and one in Alabama. Nathan's research presentation titled *Application of GIS in Watershed Condition Assessment: Little River Canyon National Preserve*,

Alabama won “Best Graduate Student Poster” at the North Central GSA meeting in Evansville, Indiana held in April.

Ken reports that the boom times continue in the classroom and salaries continue to rise in a very strong Geology job market, especially in the area of fossil fuels. He is hopeful of initiating some new research on hydrocarbons this year. Ken is always grateful to hear from you and to get caught up with your latest career and family news. (kenneth.kuehn@wku.edu, 270-745-3082)

REZAUL MAHMOOD has continued to focus on various fronts of teaching, research, and service and remained productive, teaching Dynamic Meteorology and Physical Climatology. Rezaul continued to conduct research on impacts of land-use change on long-term climate, soil moisture modeling (as it relates climate), land surface-atmosphere interactions, modeling of transport of aerosols, and hydrometeorology of flash flooding in eastern KY and the Appalachian region. Two graduate and five undergraduate students participated in these research activities and gained hands-on learning experience.

Rezaul mentored two students to present papers and posters at the 104th Annual Meeting of the Association of American Geographers (AAG) at Boston, MA; two students at the 62nd Annual Meeting of the Southeastern Division AAG (SEDAAG) in Charleston, SC; two students at the 92nd Annual Meeting of the Kentucky Academy of Sciences, Louisville, KY; and two of his students presented posters at the Sigma Xi conference here at Bowling Green, KY. Rezaul has presented papers at the 104th Annual Meeting of the Association of American Geographers (AAG) in Boston, MA, and at the 92nd Annual Meeting of the Kentucky Academy of Sciences, Louisville, KY.

During the past academic year, he published his research in the peer-reviewed *Journal of Geophysical Research-Atmospheres* (twice), *Hydrological Processes*, *Monthly Weather Review*, *Journal of Environmental Quality*, and *FOCUS on Geography*. He has also organized a special issue. In addition, Rezaul has continued to review proposals for the

National Science Foundation (NSF), which required a significant time commitment.

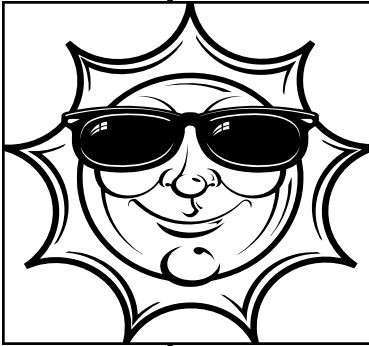
A number of his papers are either in press or currently in review with *Journal of Geophysical Research-Atmospheres*, *Atmospheric Environment*, *Transaction of the ASABE*, *Climatic Change*, and *Journal of Environmental Quality*. He has successfully organized a special issue published by the *Journal of Applied Meteorology and Climatology*. This issue focuses on impacts of land use change on climate.

Rezaul is currently serving on the editorial board of *Physical Geography* and *Geography Compass*. He has reviewed papers for prestigious academic journals, including *Geophysical Research Letters*, *Physical Geography*, and *Geography Compass*.

Rezaul has been appointed as a guest editor of a special issue for the journal *Boundary-Layer Meteorology*. This issue will focus on land-use land - cover change (LULCC) and its impacts on planetary boundary layer atmosphere and meteorological-scale events. This issue will be an outcome of last year’s NSF funded workshop, entitled, “Detecting the Atmospheric Response to the Changing Face of the Earth: A Focus on Human-Caused Regional Climate Forcings, Land-Cover/Land-Use Change, and Data Monitoring.” He is also playing an organizing role for another special issue to be published in *International Journal of Climatology*. This issue will focus on LULCC and its impacts on climate.

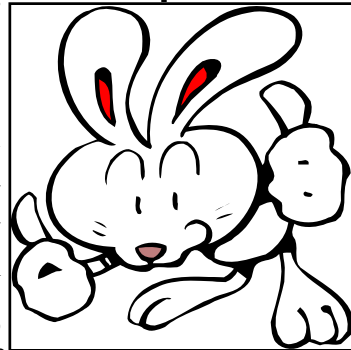
The NOAA has committed nearly an additional \$700,000 (PIs Drs Stuart Foster and Rezaul Mahmood) to continue building the Kentucky Mesonet. Currently, 10 stations are operational and foundation work (stations need significant concrete work for the tower, solar panels, and rain gauge) has been completed for eight more locations. We are hoping to operate 25-30 stations during the winter. Live data can be viewed at www.kymesonet.org. This project accounts for more than 90% of Rezaul’s professional activities.

Rezaul has continued his research on micro- and meso-scale land surface atmosphere interactions and aerosols transport funded by the United States



Department of Agriculture (USDA) (Total Budget: \$112,000). This funding allowed him to hire a post-doctoral research associate and recruit several undergraduate students. He is also in process of hiring a full-time research associate to support the existing research projects. Rezaul submitted several large competitive grants to the NSF (Total budget: \$1,200,000), USDA (\$579,000), NOAA (\$250,000), and NIH (pre-proposal: \$973,000) to study land surface atmosphere interactions.

MICHAEL MAY is starting his lucky 13th year in the Department and writes that it seems not that long ago that he and his family rolled into Bowling Green (1996 - the year incoming WKU freshmen were just five or six years old). During this past academic year in addition to his teaching the basic intro courses, environmental geology, aqueous geochemistry, and sedimentation & stratigraphy, Mike taught upper level field methods for undergraduates and grad students. The field methods courses entailed several trips to the WKU Biological Preserve in Hart County to conduct electrical resistivity surveys of the near surface geology. Some of this work resulted in presentation of a paper on utilizing national park and adjacent areas as teaching and research locations. Mike worked with graduate student Brian Ham, and Dr Stephen Kenworthy, who recently moved to the Oak Ridge, TN area. A paper entitled *Use of the Upper Green River Biological Preserve as an Outdoor Teaching and Research Center Near Mammoth Cave National Park, Kentucky* was presented in April 2008 at the north central regional Geological Society of America meeting in Evansville, Indiana. Also at the Evansville meeting, Mike presented a paper that he worked on with Dr Ken Kuehn entitled *The Bowling Green Oolite: An Important Building Stone of the Late 19th and Early 20th Centuries*. In the Bowling Green Oolite paper, he presented information on the widespread use of the local building stone in numerous areas and in buildings of note such as the U.S. Customs House in downtown Nashville, the Governor's Mansion in Frankfort, KY, and St. Thomas Cathedral on 5th Ave in New York City, just to name a few. It seems that



Bowling Green's dimension stone was highly sought after as an award winning (Columbian Exposition or World's Fair in 1893) material throughout the U.S., in the late 19th century and the first 30 years of the 20th century. Mike, along with Dr Fred Siewers and Margaret Crowder, participated in an exciting post-GSA meeting field trip in southwestern Indiana. The three enjoyed studying and touring a series of fossil-rich Pennsylvanian rocks and coal mines (complete with witnessing explosions of overburden rock above coal seams). This opportunity was available via the field GSA-sponsored trip entitled *Aspects of Pennsylvanian stratigraphy, sedimentation, and conodonts in southwestern Indiana*.

Along with continuous work on graduate student committees, Mike also worked on curriculum with the Ogden College Associate Dean and the Biology and Chemistry departments to help bring an offering of the new MS in Environmental Science to fruition. This is now an option in the college for students who have already earned a BS in chemistry, biology, geology, or geography. Dr May continued in an active role in the Kentucky Society of Professional Geologists, in particular via his helping organize the Fall 2008 trip on Chesterian and basal Pennsylvanian rocks near Rough River Lake State Resort Park and adjacent areas of Grayson County, KY. Many of the rocks to be studied are within the complex Rough Creek Fault Zone, such as near Leitchfield. This trip is also being integrated into his environmental geology and field methods courses being offered in 2008.

Mike spent a number of days teaching and entertaining a number of boy scouts and webelos scouts from both Kentucky and Indiana about things geologic and paleontologic. He was the geology merit badge counselor for 25 boy scouts and an activity badge counselor for 10 webelos scouts over the past year! All of these scouts were able to visit the department as part of earning their badges. Cutting rocks is always the biggest hit with these youngsters.

Other activities for the past year included Mike's involvement in a series of small projects related to the upswing in oil and gas activity in south central Kentucky, and litigation support related to both oil

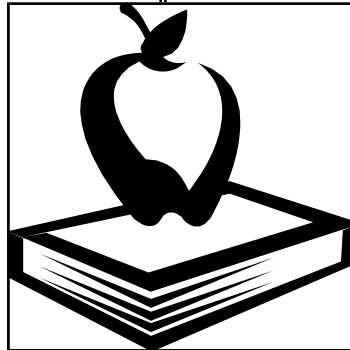
and gas and environmental topics. Also related to the increased interest in energy resources in our area was the spring 2008 grand reopening of an asphalt rock quarry in Edmonson County by Reynolds Raw Materials and Glass Construction of Glasgow, KY. Associated with the resurgence of asphalt rock or Kyrock material, Mike and Ken Kuehn were working in late 2007 and early 2008 with William Florman of Reynolds Raw Materials and the Reynolds Foundation to secure grant funds for developing the William G. Reynolds Geological Resources Center at WKU. This would be a center to be located at the WKU Research Center off Nashville Road and Campbell Lane where asphaltic cores and other hydrocarbon data obtained by various energy industry could be repositied for faculty, student and industry use at WKU. The idea is that as energy resources are developed in the region, there will be a place for faculty, staff, students, and industry people to interact and basically affect regional economic development in a positive way. The proposal was for approximately \$500K and the status of the award will be known after the Reynold's Foundation has met in late summer or early fall. Also possible with the Reynolds funding is the development of industry internships at various asphalt quarries in south central Kentucky.

Did anyone feel that earthquake on April 18, 2008? Mike certainly did, as it awakened him in Bowling Green in the early morning. This was a great event for students to experience and Mike took advantage of the opportunity to use the southeastern Illinois 5.2 magnitude quake not only to discuss it with his students but also to better inform the public about our seismic risks. He was featured in the Evansville, IN, *Courier and Press* and several Kentucky papers on the quake as well as two Midday Edition programs on WKYU FM (to listen to one of these programs go to www.wkyufm.org and click on Western' Public Radio, and then click on Midday Edition for audio archives for the piece – *WKU geologist: why did some people feel quake more than others?* (released May 1, 2008).

On a personal note, the May family continues with the busy life of sports and school as usual. Beth has been working hard at moving the science scores up for

St. Joseph Interparochial School's middle grades students from above the national average to very much above the national average. The youngest of the May boys, Kevin, just has this academic year at St. Joe's and then he is off to join his brother, Peter, at Bowling Green High School. Both Pete and Kevin continue with club soccer and Peter is a solid varsity soccer player as a sophomore at BGHS and Kevin is also enjoying playing football for BGJHS. Mike continues to enjoy spare time at the gym, out running, riding his bike on the Bowling Green greenways, gardening, and playing piano and trombone.

KOLSON SCHLOSSER enjoyed a productive first year at Western after obtaining his Ph.D. from Penn State. Kolson taught World Regional Geography, including an honors section, Principles of Human Geography, and two graduate level independent studies on violent conflict and the environment over the course of the past year. Along with working on journal publications, Kolson attended the 2007 critical geography conference in Lexington and presented his research at the 2008



AAG conference in Boston. He also led off the Spring seminar series with his presentation 'Environmental Security: Looking Back, Glancing Ahead.'

Over the summer, Kolson took personal trips to Ireland and Florida, and initiated a new research project in Canada. He traveled extensively through Ontario creating contacts and building a research network to study the cultural politics of the gemstone quality diamond industry in Canada. Kolson is excited to return to the department for another year, and looks forward to teaching Geography of North America (in addition to his usual classes) this fall.

FRED SIEWERS enjoyed a full and productive year in the Department. He taught courses in Earth History, Introductory Field Techniques, a field-based Geology of the Bahamas course, and an on-line course in Earth Systems Science Education for pre- and in-service teachers. His Introductory Field Techniques course was significantly re-designed and involved weekly outings to local outcrops, as well

as an adventure-filled weekend trip to Pound Gap on the Kentucky-Virginia border. His Geology of the Bahamas course exposed fourteen geology students to the amazing geology, karst, and reefs of San Salvador Island, a place very dear to those who attended the two previous offerings of the course. Both of these field-based courses proved to be very engaging and rewarding experiences for all involved.

On the research and service front, Dr Siewers focused much of his energy on his work in the Bahamas. That work involved a continuation of his research on the geology of Bahamian saline lakes, a co-authored presentation at the national GSA meeting in Denver, and the organization of the 14th Symposium on the Geology of the Bahamas, held on San Salvador Island in June 2008. In addition, and related to the Bahamas symposium, he participated in a week-long reconnaissance trip to Rum Cay, Bahamas, with some of the veterans of Bahamian geology. That trip proved to be one of the most valuable professional development experiences of his career and, of course, a whole lot of fun!

In addition to his work in the Bahamas, Dr Siewers continued to be quite involved in the Kentucky Society of Professional Geologists. As secretary and treasurer of that Society, he assisted with the planning and implementation of the KSPG Fall Field trip, which this year focused on Mammoth Cave and the Nolin River Gorge region. The trip, which was co-sponsored by the eastern section of the AAPG, was highly successful and very well attended..

Dr Siewers continued to be an active and engaged member of the Department and campus community. He was very involved in the search to hire a new faculty member to replace Dr Nick Crawford and he developed a five-year course rotation plan for the Geology program. He represented the Department and College on University committees and continued to be an active and contributing member of the Bowling Green/Warren County community. Dr Siewers loves hearing from past students and anyone interested in the Department's programs. Feel free to contact him anytime at fred.siewers@wku.edu



L. MICHAEL TRAPASSO has been up to same old routine, with one exception (discussed later in this piece). His teaching assignments have included the usual, Introduction to Physical Geography (GEOG 100), where he uses his textbook *Essential of Physical Geography* Brooks-Cole Publishing (a Division of Cengage Learning). He also taught a few Meteorology (GEOG 121) classes. Surprisingly, his introductory classes still manage to draw a few new majors and minors into the Department. He redesigned Observational and Analytical Meteorology (GEOG 222) to help to prepare sophomores for upper division weather and climate courses. His favorite course, Applied Meteorology and Climatology (GEOG 426), helps juniors and seniors become better aware of the various related aspects of the field. Throughout the year, Trapasso's role as the Laboratory Administrator for the GEOG 121 computer laboratory continued to keep him challenged. It takes time and effort to keep that computer lab operating, but he stays on top of it. [In a related story in this issue, he explains the difficulties in keeping the outmoded and failing College Heights Weather Station operational, and will reveal a new plan for the old Weather Station.]

On the graduate level, he was a member of two M.S. thesis committees this year. He enjoys helping to turn out excellent young professionals into the various fields of Geoscience.

With respect to his textbook, the publishers have had him working on a new edition to come out in July 2008; they have also requested the authors to write a shorter, more-condensed, paperback version of the textbook. It is hoped that new, shorter, condensed version will increase circulation and sales. Will this work? Trapasso and his coauthors don't know, but they'll go along with this new strategy from the folks at Cengage Learning, and see what happens.

When not working on his textbook, Michael records his weekly National Public Radio feature on WKYU- 88.9 FM entitled *Up in the Air*, which airs every Thursday at 9:30 a.m. This feature gives him a chance to address whatever questions and comments he receives from the listening audience in a fun and

instructive way. He has done this feature for about two years now and has had a lot of positive feedback from area listeners. He says, "the segments are fun to do, but they take time to produce, and at least one has to be recorded and ready-to-air each and every week."

Michael's travel adventures have run from cold to hot this past year. Last summer he spent a few weeks re-visiting Alaska. This time he took a cruise through the Inside Passage and visited places only accessible by ship. Then he took an extensive land tour to cover areas he had not seen before. His highlights included a helicopter landing on a glacier, and a flight over Denali (Mt. McKinley) the tallest peak in North America.

During Spring Break, he ventured to Israel. When asked if he felt nervous about a potentially dangerous trip, he said, "I doubt if it will ever be completely safe over there, so I might as well go now and hope for the best." He found Jerusalem to be fascinating and, as a non-religious man, he was truly awe-inspired to walk in the steps of Jesus and his disciples. Thousands of years of history unfolded on this trip and he wouldn't mind going back to the Holy Land some day. (A short essay about this trip appears elsewhere in this issue.)

This summer, Michael tried his hand at being an artist ... of sorts. The Capital Arts Alliance chose to let him exhibit some of his photos. The exhibit displayed landscapes from various countries around the world. His exhibit was displayed in the Capital Arts Building's Mezzanine Gallery through the month of June 2008. This was the first time his photos had been shown to the public (other than those he displays in his slide and PowerPoint presentations). According to Michael, "I'm not really an artist, and these photos are more Geography and Geology than art, but sometimes Earth looks so lovely ... it is art."

As an amateur Civil War scholar, Trapasso received the "Col. Atwood G. Hobson Prize" for Historical Research from the Friends of Riverview, here in Bowling Green. He is still called upon when people need help with Civil War History questions and activities. As a Civil War Re-enactor he continues to find time to get out and play. Lately he has been



riding with a mounted artillery unit (Ely Lilly's Union Battery). He still maintains contact with the 7th Tennessee Cavalry (his oldest association in the hobby), the 6th Kentucky Cavalry (his occasional unit to ride with), and the 10th U.S. Cavalry (Buffalo Soldiers) out in Colorado. Sadly, he admits that he doesn't get the chance to participate as often as he would like, but refuses to give up on this great hobby altogether.

Finally, and after careful deliberation, Dr Trapasso decided to retire from his full-time position at Western Kentucky University. He completed 28½ years of service in the University and the Department and will shift into an 'optional retirement' role. For up to the next five years he will continue to teach part-time in the Department. He says he wants to see the new B.S. Degree in Meteorology off to a proper start. Trapasso teaching some courses part-time will allow the new faculty members to develop their required courses, and extend into specialty courses as time goes on. The Department will be seeing less of Michael Trapasso in the future, but he insists that he is still a member of the team.

ANDREW WULFF continued to develop undergraduate research opportunities, be involved at a high level in field-based geology research and learning, and augment the analytical side of "hard rock" geology at WKU. Two grants were obtained to continue research with two undergraduate geology majors (Chelsea Brunner, Heather Monohan), and one graduate student (Samantha Kramer) studying dripwater chemistry in Diamond Caverns, Kentucky. This research has been quite productive and we hope to get funding for stable isotope analyses and for an extension of this project. Andrew and his students were active at professional meetings, as they combined for eight research presentations at regional and international scientific conferences. He was the lead author on one publication and co-author on another one, and made an additional seven presentations, including one to the WKU Board of Regents on the importance of field-based education in the geosciences. Dr Wulff also was awarded two

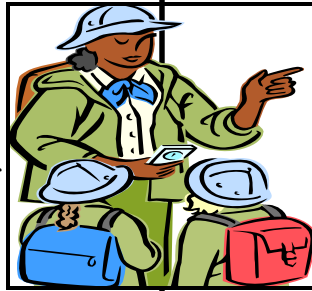
grants to develop and purchase materials for a series of hands-on activities in geology for 4th -8th classrooms. These, along with other similar activities, have been well received by teachers in Bowling Green and the surrounding counties, along with an accompanying website with mouse rollover identification of minerals and rocks designed by student Matthew Dycus.

Andrew is currently supervising undergraduates working on projects ranging from radiogenic isotope characterization of lava flows from Chile and dikes in the Mojave, to developing a classification scheme for the external morphology of geodes from Kentucky, the influence of external processes on cave dripwater chemistry at Diamond Caverns in Kentucky, accessory minerals in carbonatites from Arkansas, and intrusive relationships and geochemistry of a gabbroic massif in west-central Maine. He is also the academic advisor for twenty students, two graduate students, and is on four graduate committees. Students presented aspects of their research at the Kentucky Academy of Science, Sigma Xi, the International Conference on Karst Hydrogeology and Ecosystems, Posters at the Capitol, and a regional GSA meeting. Two more will present at the national conference of the Geological Society of America in October.

Dr Wulff co-led the annual structure/petrology fieldtrip with Ken Kuehn to sites and sights in Kentucky, Tennessee, and North Carolina in the spring. Each year it seems to be more difficult to convince students of the absolute necessity of gaining field-based experience and expertise, especially when it means they have to give up their jobs for a long weekend, but the benefits are so great! He also taught three weeks of the summer field geology course with students from WKU, Illinois State University, Northern Illinois University, and Central and Eastern Michigan Universities. Once again, students unraveled the geology of Montana, Wyoming, and South Dakota – and braved 40” snow in one locale – in the middle of June! Ah, what stories will be told!

Dr Wulff finished his term as President of the Kentucky Society of Professional Geologists (see other articles in GEOGRAM for KSPG activities and fieldtrips), and continued in his terms as a national

Councilor for the Council on Undergraduate Research (CUR), as a Delegate to the American Association of Petroleum Geologists (AAPG), and as one of the six-member board of the Alliance for Geoscience Field Education, standardizing field-based geology courses and developing a National Center for Field Geology. He finished his term as the Ogden College Faculty Fellow for the Center for Leadership Excellence, and will publish two more articles on the results of a campus-wide survey to examine attitudes and awareness of the Leadership program. He was just appointed to the university-wide General Education Review Committee, as one of two faculty members from Ogden College. This committee is charged with overhauling the entire General Education program at WKU in a very short two years! If you have suggestions about Gen Ed, feel free to email them to Andrew.



Dr Wulff is committed as ever to bringing more earth science to the K-12 classrooms in the area and he and his students logged more than 1100 contact hours with students (primarily 4th, 5th, and 10th graders) at 10 schools in four counties and the Bowling Green area this past year. He has become known as “Dr Rock” and is tickled by the minor celebrity that accompanies his visits to area schools. Andrew continued to train geology majors to help present aspects of geology to students at area elementary and high schools and become more involved in the community. Topics included the wonders of rocks and minerals, aspects of structural geology, geological hazards, and various earth resources. Additional activities for this year include units on fossils, crystal growing, and maps. Some of the geology majors have even gone back to their old schools as the “experts”.

Andrew enjoys the challenges of identifying rocks and minerals brought to the Department by folks from all over the area, which this year included proposed meteorites, sedimentary iron deposits, carbonates of all sorts, artifacts, and various ores. If you have samples or questions – bring them in! He continues to be involved in the community as a certified Community Emergency Response Team (CERT) member, giving interviews on radio and TV, and giving a series of presentations on earthquake preparedness and radon analysis and mitigation. He

continues to enjoy helping to organize neighborhood events (e.g. a National Night Out potluck event), playing bass and singing around town in a rock band, and is a story-teller at a local church Sunday school.

JUN YAN notes that, thanks to the efforts of all the GIS faculty and leadership from the college and Department, WKU's GIS program has grown substantially over the past five years. The old curriculum has been renovated with course contents updated and a number of new GIS specialty courses added. Currently the Department offers a total of thirteen undergraduate GIS-related technique courses. WKU now has the most comprehensive GIS curriculum in the region.. In addition to an undergraduate certificate in GIS, a graduate certificate in GIScience, and a GIS minor, WKU also offers a B.S. in GIS. Dr Jun Yan is proud to be a member of WKU's Geography & Geology faculty.

Since his appointment in 2004, Dr Yan has taught a number of upper-division GIS and spatial methods courses, including GIS Analysis and Modeling, GIS Applications Development, Transportation Planning, Special Topics in GIS, GIS Databases, and Advance Geostatistics. In all these courses, he has shared his expertise and experience in GIS and spatial quantitative methods with both graduate and undergraduate students. In all these courses, students are exposed to a variety of topics that are crucial to GIS professional development. For instance, a new GIS specialty course, GIS Databases, was development in Fall 2007, which makes WKU the only institution in the region to offer such a course in GIS database design and management. This course covers the development of the ESRI new data model, Geodatabase, and ArcSDE technology.

Dr Yan also had a very productive year in research activities. His main research area includes Geovisualization (GVIs), geographic data mining (GDM), and spatial statistics. Over the past academic year he has published three articles, including a book chapter titled *Self-Organizing Maps: Applications in Geographic Information Science*. In addition, two



papers appeared in the *2007 Papers of Applied Geography Conferences* (one of which was co-authored with recent graduate student Caitlin Hager). In addition, two more papers have been accepted and are forthcoming this year in two prestigious international journals, *Environment and Planning B* and *Computers, Environment and Urban Systems*. He also attended the AAG annual conference in Boston and presented research on detecting "hot-spots" in spatial point events, such as traffic accidents, within network spaces.

In order to get students engaged in real-world GIS applications, in the past year Dr Yan also focused his efforts on developing projects that can best serve local communities. Students can have the opportunity to apply what they learn in class to solve real world problems. Currently he and his student researchers are working on a number of projects related to community safety. Findings from a project on crime mapping and analysis have helped the BGPD better understand the spatiotemporal patterns of property crime in the region. In addition, Dr Yan also worked actively with the Bowling Green Warren County Metropolitan Planning Organization (MPO) in a number of areas related to transportation planning practices.

Over the past year, Dr Yan has also been working diligently to increase the publicity of the WKU Center for GIS and the Department. Recently, he accepted an appointment as an adjunct lecturer for the International Research Center on Karst (IRCK) in charge of Geographic Information Systems (GIS) training for IRCK. To fulfill his duties, Jun recently conducted a workshop at the China Karst Dynamics Laboratory, Guilin, China (see photo). The workshop - *GIS and Spatial Analysis and its Applications in Geoscience* - was the first formal workshop sponsored by IRCK since its establishment early this year. In addition to being selected as one of four oversea GIS researchers, Dr Yan also presented his research at the *2008 CPGIS Young Scholar Summer Workshop*, sponsored by the International Association of Chinese Professionals in GIS (CPGIS). The workshop was held successfully at China Eastern Normal University at Shanghai.



Matt Brunt demonstrating the Mammoth Cave Historical GIS at the Mammoth Cave Homecoming, July 2008.



Dr Algeo contemplates how she can work the Center of the Universe, located in Wallace, Idaho, into a Geography 391 lecture about mean centers, centroids, and weighted centers of population.

ALUMNI CONTRIBUTIONS

Contributions to the Department of Geography and Geology Development Fund in 2007-2008 increased again this past year. The number of individual contributions to our Fund topped the 100 mark! Thanks to everyone for helping us achieve our goals this year; we were able to support several students attending conferences and participating in study abroad programs. Your generous contributions go a long way to ensuring that we have sufficient supplies and equipment for student use. When you receive a call from 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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 and Amy Rich*

ALUMNI NEWS

Burton (Moreland), Cara N. (Geography 2005) writes that since her graduation she had a beautiful baby girl in Nov. 2006 and was due for her second this past August! Cara works in Client Services for Bob Isgrigg and Associates (Land Surveying & Engineering) and gets to deal with Phase I and II Environmental Assessments. She loved her time at WKU and look forward to coming back for homecomings!!

Calhoun, Gilbert T. (Geography 1955) is retired from the C.I.A., the US Air Force, and NATO's command, control, and consultation agency. He lives in Bowling Green, KY.

Chalmers, Patty (Geology 2005) graduated *magna cum laude* from WKU with a dual degree in Geology and Anthropology. She earned her MS degree in Geology at Rensselaer Polytechnic Institute in Troy, New York, and moved to Houston last summer. She passed the ASBOG fundamentals exam for registration as a professional geologist and is presently doing Environmental Liability Management with URS Corporation in Houston. She recently married Paul Burgess in Houston, TX.

Childress, Justin (Geography 2006) moved to Melbourne, Florida, and has taken a position as a geospatial analyst with the Harris Corporation. He is waiting for security clearance from the D.O.D. for a possible job in Wooster, Ohio.

Croskrey, Andrea (MS Geoscience 2006) is a Physical Scientist, Geologist/GIS Analyst, for the Geologic Resources Division of the National Park Service.

Davis, Will (MS Geoscience 1997) is in real estate sales and management with The Litchfield Company Real Estate in South Carolina. Will writes that he can't believe it's been 10 years since the Department helped him mature from a college student into a professional. He is proud to report that he has been very successful in life, both in family and career.



Fill out the Alumni Information sheet on the next page and mail it to the Department today. We want to know how your career and life are progressing. You can also attach a small passport-sized picture of yourself, if you like, that we can publish alongside your news.

“I predict a fantastic 2009 if you send in your Alumni Information sheet right away.....”

DeMott, Laura (Geology 2003) is a Senior Petroleum Geologist with ExxonMobil in Houston, TX.

Fisher (Carter) Brittany L. (Geography 2007) recently accepted a position as planner with the City of Elizabethtown, KY.

Grider, Harold (Geography 1988) is in the US Army as an aviation specialist. He fondly remembers Karst Hydrology with Nick Crawford.

Hale, John T. "Clutch" (Geography 1980) has been employed for over 20 years in the modular construction industry in sales and engineering. He is currently a medical facilities sales manager for Satellite Shelters, Inc., in Ohio. "Clutch" writes that the best advice he ever got was in a required course called "research methods" with a wise professor named Wayne Hoffman. His advice was that it is not critical that you "know" the answer, but it is critical that you know how to "find" the answer!

Hill, Mike (Geography/Planning 1999) is a Planner/Project Manager for BTM Engineering, Inc., in Louisville, KY.

Holbrook, Cody (Geology 2005) earned his MS in Geology from New Mexico State University in May 2008. His thesis addressed the structural and stratigraphic analysis of a salt-cored structure in LaPapa Basin, Mexico. Cody has accepted a job offer from Shell Oil in Houston and planned to take up the position this past summer as an exploration/production geologist.

Johnson, Greg (Geology 2006) has accepted a position with Quantum Technology Sciences, Inc. (QTSI), in Cocoa Beach, Florida. He will work at Patrick Air Force Base in the area of nuclear treaty monitoring and nuclear event detection. Greg recently completed his M.S. thesis, "Using Focal Mechanisms to Investigate Seismotectonics in New Madrid Seismic Zone" at the Center for Earthquake Research and Information (CERI), University of Memphis.

Johnson, Perry (Geography 1983) has retired from the U.S. Department of Homeland Security and now lives in Moreno Valley, CA.

Lynch, Douglas W. (Geography 2001) recently accepted a position with TranSystems as its Senior GIS Planner, serving as a national GIS practice leader in Orlando, FL.

Martin, Ty (Geography 2004) works for the regulation development branch of the Kentucky Division for Air Quality, Kentucky Environmental and Public Protection Cabinet. His really big news is that he married **Holly Pelt (Geography 2004)** at Disneyworld in Florida this past December.

Prater, Christopher W. GISP (GIS Graduate Certificate 2005) is Coordinator of Enrollment Forecasting and Boundary Planning, Rutherford County Board of Education, TN. Since leaving WKU, Chris has married and now has a baby girl. He is starting a planning/GIS department from scratch for a school system that currently has 37,000 students and is adding 2,000 yearly.

Pricope, Narcisa (MS Geoscience 2006) recently received an NSF Doctoral Dissertation Improvement Grant for her research in Africa—she is currently pursuing a Ph.D. at the University of Florida. Narcisa recently married Dr John All, the Department's environmental scientist.

Pruett, Scotty (MS Geoscience 2000) has been accepted into the geography Ph.D. program at West Virginia University in Morgantown and has been awarded a graduate teaching assistantship.

Rice, Donald E. (Geography 1982) is a hydrologist with the U.S.G.S. and lives in West Trenton, NJ.

Rink, Tim (Geography 2003) recently took a job with Stantec (formally FMSM) in Louisville as a GIS Analyst.

Thornton, Joseph (Geology 1977) is a Senior Geologist and Director of Environmental Services for GEM Engineering, Inc., in Louisville, KY.

Tobin, Ben (MS Geoscience 2007) writes that his wife Heather and he are currently working at Sequoia National Park (Heather is working in Air quality and Ben is working in cave and geologic resources). Their son Liam is now almost three and more than a handful. They are planning on going back to school starting in December (Ben will be in the Aquatic Resources program at Texas State in San Marcos).

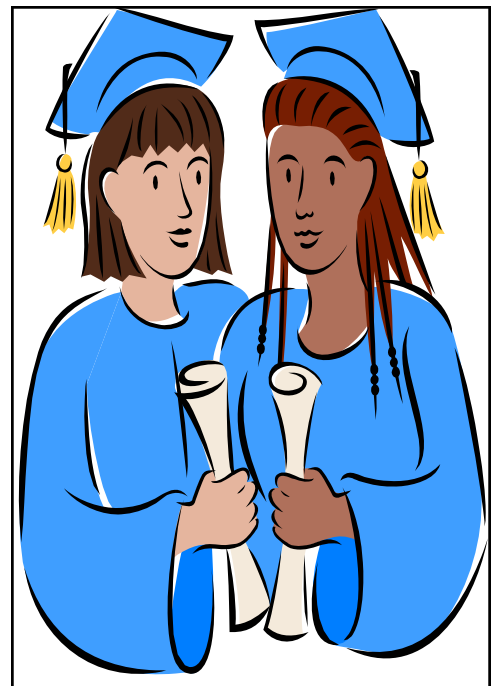
Villegas, José B. (Geography 1984) is a landscaper in Bowling Green with his own business - Villegas Landscaping and Lawn Services.

Warren, Wendy (Geography 2007) is a park ranger with the U.S. Army Corps of Engineers at Rough River Lake. She writes that she had some great times with the Department and will never forget the summer field class she took that visited the Southwest U.S. and the Study Abroad trip to Chile and Argentina. The Department faculty are some of the best on campus!

Wayne, Robert J. (Geography 2004) is currently pursuing a joint Master's degree - M.S.E.S. (Applied Ecology) and M.P.A. (Environmental Policy and Natural Resource Management) - at Indiana University, where he is a research assistant.

Zimmerman, Andy (Geography 2004) is a drummer for the band "The Runner" based in Nashville. Andy writes that even though he's a full-time musician now, he has been elected the GIS Specialist for the band - he can't help but make elaborate maps for all their tours!

★ **YOUR PROFILE AND NEWS** ★
★ **BELONG HERE!!** ★



Patty Chalmers and Paul Burgess recently married in Houston, TX.

GEOGRAM is designed, edited, and produced for the Department by Dr David J. Keeling.
david.keeling@wku.edu
<http://www.wku.edu/~david.keeling/index.htm>
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Alumni Information

Name of Graduate _____
(include maiden name)

Major _____ Year of Graduation _____

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