

## Unit Productivity Award Application For Academic Departments, 2005-2006

Academic Unit Name: Department of Geography and Geology  
Department Head: David J. Keeling  
(Key Indicators of Productivity for 2005-2006):

### SUMMARY OF APPLICATION:

- 🌐 Majors and minors in the Department have increased by about 50 % since 2001.
  - 🌐 Over \$4 million in grants and contracts received by the Department in 2005-06.
  - 🌐 Faculty and students were featured 30+ 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 Tanzania and Australia in 2006, and are in development for Western Europe in Winter 2007 (with Leadership Studies), the Bahamas in Spring 2007, and China for Summer 2007, with over 50 students scheduled to participate.
  - 🌐 The Department awarded 28 GIS Certificates this year; and 50 students have completed half of the requirements. A new Graduate GIScience certificate has been developed, with 7 students completing the program.
  - 🌐 Two students received awards at the annual Sigma Xi student conference; 3 students won awards at the annual Kentucky Academy of Science meeting.
  - 🌐 Three students were selected for National Science Foundation and other (NASA) funded summer research programs.
  - 🌐 Thirty-five students were actively engaged in applied research under faculty supervision through the ARTP and through externally funded research projects.
  - 🌐 Faculty and students visited 20 overseas locations for research, professional development, conferences, study-abroad programs, expedition study tours, and collaborative activities, including three separate visits to Chile, two visits to China, and multiple visits to Europe and Africa.
  - 🌐 Nick Crawford developed a void-seeking robot in partnership with Engineering.
  - 🌐 A geoscience graduate student discovered 27 new species at the Sequoia and Kings Canyon National Parks.
  - 🌐 Rezaul Mahmood received the 2006 WKU Award for Outstanding Research and Creativity – he also won the Ogden College Award.
  - 🌐 Geology faculty Rick Scott won the Outstanding Ogden Adjunct Faculty Award.
  - 🌐 Sara Dalton was recognized as the SGA's Ogden Outstanding Teacher of the Year.
  - 🌐 The Kentucky Climate Center received funding to develop the Kentucky Mesonet, approved by the legislature as the Commonwealth's official climatological center.
  - 🌐 Graduate student Scott Schoefnacker was recognized as the Outstanding Ogden College Graduate student.
  - 🌐 Chris Groves received UNESCO funding through 2009 for the global karst aquifers and water resources project.
  - 🌐 Geology faculty and students engaged with approximately 1500 P-12 students during the year on issues from earthquakes to volcanoes and the earth's history.
  - 🌐 David Keeling lectured on two international study tours for the American Geographical Society, and was elected Assistant Treasurer of the organization.
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## **Department of Geography and Geology Unit Productivity Award Application**

### **I. Increasing Student Learning**

The primary goal of the Department for the 2005-2006 academic year has been to focus on student retention in our foundation and general education courses, and to identify students who were close to graduation but had either dropped out or were missing one or two courses. A secondary, but equally important, student-learning goal for the year has been to take the principle elements of the QEP and continue to integrate them into the department's various programs.

Faculty identified five students this past year who had dropped out for more than one year (no classes in 2004-2005) and who only lacked 6 hours or less for graduation. The Department contacted them, identified the problem, and worked with the students to move towards graduation. We are pleased to report that four of the five students graduated this May or August 2006, and the final student is in the process of completing a GIS internship as a requirement of program completion. The Department also focused on retention in lower-division classes by introducing a pre-test in selected geography and geology courses. This involved creating a knowledge base at the beginning of the semester, building that knowledge base during the semester, and then measuring learning outcomes at the conclusion of the course. For example, in Introduction to Latin American Studies (GEOG 200 co-taught with History, Political Science, and Spanish), the average score on the pre-test was 26%. At the conclusion of the semester, the average score was 76% (n=65). In Geology 111, the pre-test revealed similar beginning scores, with a concluding average score of 70 percent. Mid-term exams and projects built on this knowledge base during the semester such that most students were able to demonstrate a satisfactory level of basic knowledge in the subject at the end of the semester. Coupled with 5<sup>th</sup> Week Freshman Assessment, advising, and other initiatives, the Department is attempting to combine the principle goals of Quality Enhancement with the goals of student retention in order to measure how prepared students are for specific courses, why they drop out, and what they have learned (in terms of their basic knowledge base) during the semester. These data feed back into both course and program enhancement, they identify general weaknesses in the curriculum, they highlight strengths and weaknesses in student study habits, and they allow faculty to self-diagnose for improvement.

A third goal during the academic year has been to continue engaging students in directed research, study-abroad programs, field camps, internships, and professional conference activities, thus preparing them for success in a global society. During the year, 20 students completed external internships for credit, 52 students completed independent research projects supervised by faculty and presented those projects at a variety of local, national, and international conferences, 30 students participated in study abroad and field camp programs, and a dozen students were engaged in other research activities within the Department. The Department's long-term goal is to have every undergraduate major (260 as of July 1, 2006) engaged in a research-related activity that leads to directed research, study abroad, internship, or conference participation experience. Faculty believe that blending classroom learning with community-centered experiences (local, regional, or international) is a key element in the intellectual and skill-based development of our students. The socio-economic development of communities in our service area (and beyond) can only be achieved if students receive both an intellectual and a practical preparation for life after university. To achieve this goal, the Department is enhancing its geography program structure to require a research project, field camp, or internship of every major, effective Fall 2007.

Two students enrolled in the 2005 summer geology field camp run by Dr. Wulff in Utah, part of a consortium with the University of Iowa, with another student enrolled for Summer 2006. Twelve students and three faculty participated in the Department's annual summer study-abroad field camp to northwestern Chile and Argentina in July 2005. New study-abroad programs were introduced during the Winter 2006 term, with seven students and two faculty traveling to Tanzania, East Africa, and one faculty and six students joining a research consortium at the Gersace Research Center in the Bahamas. A summer 2006 program to Australia with six students and two faculty departed in June, and a Winter 2007 program to Western Europe in partnership with the Leadership Program is in development, as is a summer 2007 program to China.

Three geology majors were selected for summer research programs; one participated in a National Science Foundation REU experience through the Keck Geology consortium studying in Maine; another is working on Mars Rover data with a NASA summer internship; and the third is taking a summer course in field volcanology offered jointly by the Los Alamos National Laboratory and the University of New Mexico. Six students from the Department's Graduate Geoscience Society and Geography Club helped to administer the annual Kentucky State championship of the National Geographic Bee in March. Working with 100 middle-grades students helped our students appreciate the depth of knowledge required to become truly geographically competent. Faculty and students also contributed to Girls in Science, the Science Olympiad, and dozens of other activities that engaged over 1,500 primary, middle, and high school students from our region.

Throughout the academic year, 35 students were actively engaged in directed research projects and other activities related to the ARTP and Programs of Distinction (Kentucky Climate Center, Hoffman Institute, Center for Cave and Karst Studies, and the Water Resources program), and twenty other students worked on research projects directed by department faculty. Moreover, dozens of students were employed by the Lost River Cave program and at Mammoth Cave National Park as guides and assistants, or worked on the Kentucky Cave Survey project.

Although student learning skills are developed through both classroom and applied research experiences, faculty firmly believe that attendance at, and participation in, professional meetings and conferences are important aspects of the learning process for students. Faculty again worked hard this year to encourage more students both to attend and to present research at conferences. Eighteen geoscience students presented research at the annual WKU Sigma Xi research conference in April (11 graduates and seven undergraduates). In March, nine graduate students and six undergraduates presented research or attended workshops at the annual meeting of the Association of American Geographers convened in Chicago, and four undergraduate students presented their research at the annual Posters-at-the-Capitol event in Frankfort. Students also made presentations at the 55<sup>th</sup> annual meeting of the Geological Society of America's southeastern division in Knoxville, TN; at the National Cave and Karst Management Symposium in Albany, New York; at the 117<sup>th</sup> annual Geological Society of America meeting in Salt Lake City; and at the 2005 Kentucky GIS conference.

Sixteen geoscience students presented their research orally or by poster at the annual Kentucky Academy of Science conference in Richmond, with department students taking first, second, and third places in their respective geography and geology sections. In September, several graduate and undergraduate students traveled to Athens, Greece, to participate in the 14<sup>th</sup> International Congress of Speleology. Graduate student Narcisa Pricope traveled to the Bahamas and to Argentina as part of her graduate experience, and she also attended the 25<sup>th</sup> Annual ESRI International GIS Users Conference with another graduate student, after both received a competitive scholarship from ESRI to work as student assistants.

Another ongoing challenge during the past year has been to engage students more successfully with the technologies, theories, and applications that are demanded by employers and society. Part of the Department's mission is to continue developing an interdisciplinary approach to Geographic Information Sciences (GIS) that provides learning opportunities for students from all disciplines across the university. The GIS program continues to grow steadily, with 75 students now having completed the full GIS Certificate Program, the only one of its kind in the Commonwealth. Another 110 students are enrolled in introductory GIS courses for the summer and Fall 2006 semesters, while a further 50 students have completed half of the requirements for the GIS Certificate. The Department provides a full-time GIS Director/instructor, funded originally by *Action Agenda money*, and employs six students as hands-on GIS lab assistants. Another eight students are engaged in GIS-related research, funded in part by a second \$10,000 grant from Institutional Technology and a \$6,000 grant from the Telecommunications Department to continue the complete digitization of the campus. New program initiatives in the geology program have focused on encouraging students to utilize more technology in their research, especially the Scanning Electron Microscope, equipment at the Materials Characterization Center, GIS, isotope equipment at UK's Environmental Research Lab, and other advanced equipment. Students who presented posters at the

GIS, GSA, AAG, Kentucky Academy of Science, and Sigma Xi conferences demonstrated particular skill with these technologies.

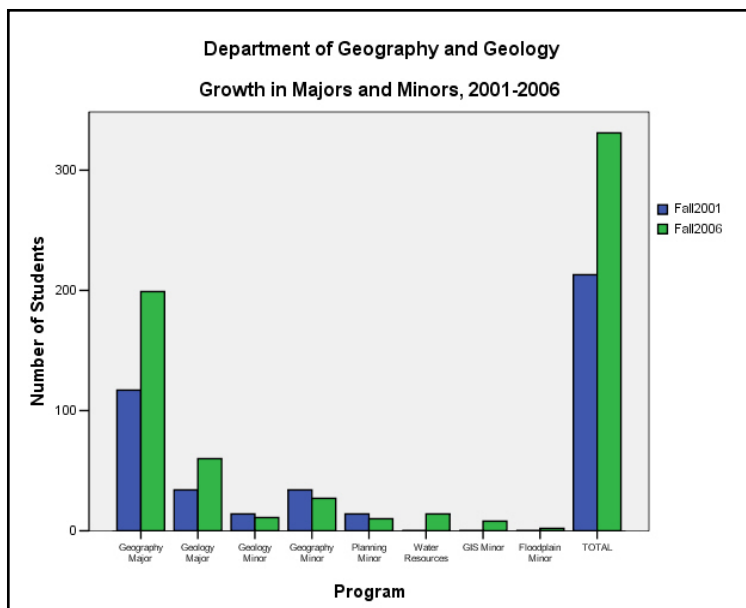
The Department's 13-hour undergraduate GIS certificate program, along with the 12-hour Graduate Certificate in GIScience, continued to attract new students. Seven graduate and 21 undergraduate GIS certificates were awarded during the year. A second GIS graduate student was hired by the world's leading GIS software company, ESRI, as a consequence of her winning a scholarship to attend the annual GIS User's Conference. The Department continues to build partnerships with the Engineering, AMS, Biology, Agriculture, Recreation, and Business departments to improve interdisciplinary opportunities incorporating GPS, GIS, and other land-mapping technologies. A new GIS for Engineers course was approved and will be offered in Spring 2007, and a *new Internet GIS course* has been approved for Fall 2006 – this course is the first of its kind in the region and takes advantage of cutting-edge research in interfacing GIS with the Internet. In addition, the Department *continues to collaborate* with the Agriculture, Business, Biology, and AMS departments to develop specific data sets for these departments' majors to use in a GIS mapping environment. Increasing levels of inter-departmental collaboration are designed to enhance the learning opportunities for students and to promote a multidisciplinary approach to problem-solving strategies.

Throughout the year, the Department continued to refine its curriculum, in consultation with graduate and undergraduate students in the program (“*closing the loop*”), with additional changes and new courses in effect for the 2006-2007 academic year. In addition to the new GIS course mentioned above, a new Synoptic Meteorology course is offered for the first time in Fall 2006. Student demand for meteorology and climatology courses (110 majors in this concentration), coupled with the development of the Kentucky Mesonet project, has generated, and will continue to generate, significant research opportunities for students,

The Department targeted the Geology and Meteorology programs for *academic and infrastructure improvements* after student assessments, course evaluations, and faculty feedback from more advanced courses suggested that dedicated lab sections be added to account for the significant time required for independent project development. A BS in Meteorology program is in development, and geology faculty are developing a five-year strategic plan to enhance resources, teaching, and research productivity. Assessment activities have revealed that students still are not engaging effectively with the scientific method and with the major theories and advancements in the geosciences. As a consequence, greater attention is being paid in the undergraduate and graduate research methods courses to address this deficiency, and a new 499-Professional Development course for senior assessment is now in effect for both the geography and geology programs. As an example of “*closing the loop*” between assessment and program quality enhancement, the restructuring of these courses demonstrates how valuable regular assessment and refining of course content, pedagogy, and technology can be. The quality of the Department's majors will be enhanced over the coming years as a consequence of this process.

## II. Developing the Student Body

The Department has experienced a **50% increase** in majors and minors between Fall 2001 and Spring 2006. At the end of the Spring 2006 semester, the Department recorded **224** majors in geography (235 in 2005), **75** in geology (62 in 2004), and **93** total minors (82 in 2005). *This is a 3.5 percent increase in declared majors and minors over the 2004-2005 academic year.* Of these, 25 majors graduated in May (along with 11 minors), with another six scheduled to graduate in August. The Department graduated 40 students from its major programs between August 2005 and May 2006. The Department has a target of at least 40 new majors each year to maintain the numerical strength of its programs, and it has generally met this target over the past few years. Most of the Department's majors in geography and geology are recruited from freshmen in the general education classes. Consequently, faculty expend significant effort connecting with freshmen by promoting the Department's majors and minors, recruiting for the geology and geography clubs, encouraging freshmen to become familiar with the Programs of Distinction, and targeting freshmen for assistance by the Department's peer tutors. Overall, based on trends for the past decade, the number of majors



and minors in the Department is growing steadily – this despite a national trend of declines in science enrollment in recent years. Particularly gratifying is that new minor programs in Water Resources and GIS have 26 students enrolled at the end of Spring 2006, with another two students enrolled in the new Floodplain Management *minor offered jointly* with the Engineering Department.

The Department continued its long-standing tradition of excellence in recruitment, teaching, learning, advising, and retention. It focused again this year on *improving retention*, particularly in the lower-division courses that satisfy both general education and major requirements, as most students entering WKU

have very little preparation in the spatial sciences. Preliminary knowledge assessment quizzes continued to show that many students are unable to find their own state or county on a basic map, few have elemental knowledge of the world around them, and few are able to engage competently with the basic elements of geoscience. Consequently, the failure rate in lower-division classes continued to run around twelve percent on average per course during the academic year. Faculty are evaluating the efficacy of pre-testing and other forms of basic knowledge assessment to help students identify weaknesses in both knowledge-acquisition techniques and in the application of scientific principles. The Department took the lead in testing a potential university wide “clicker” student-response system.

Incoming freshmen pre-declared in the geosciences are encouraged to take GEOG175 (*Freshmen Seminar*), and this course typically enrolls 10-15 students each Fall semester. Every incoming freshman is advised by the Department Head and assigned a departmental advisor. Students are required to meet with an advisor at least once a semester, and the Department Head advises all students before they submit their degree programs. Every major is also advised during the semester of graduation, either by the principal advisor or by the Department Head. The Department offers one-page information sheets on its various programs, supplemented by glossy publications provided by the professional organizations in geography and geology, and these are distributed at every opportunity to prospective students. The Department also responds with a personal letter and a copy of its recruiting material to each potential student identified by the enrollment office, solicited via the website, or contacted by email. Over the past year, the Department has mailed material in response to *over 150 student inquiries*, resulting in at least twenty students pre-declared as geography or geology majors for the Fall 2006 semester, and six transfer students from other Kentucky institutions. Moreover, the Department participates in many of the WKU-sponsored *recruitment activities* held around the state, and it continues to recruit students at state and regional scientific meetings and conferences.

The Geography, Geology, and Geoscience clubs play important roles in the recruitment, retention, and development of students. These three student-led organizations provide mentoring, peer support, research opportunities, seminars, and field-trip experiences for members. For example, through the efforts of the Graduate Geoscience Society, 15 students traveled to Chicago in March to attend the annual conference of the Association of American Geographers, accompanied by six faculty. Students raised money for conference and other trips by holding bake sales, by selling ice cream and sodas, by soliciting support from faculty and other students, and from travel scholarships provided by the WKU Foundation and the Department. The Geology Club students raised money and foster interest in their activities through regular rock and gem sales, seminars, and tee-shirt sales, and regularly attended annual regional and national geology meetings and conferences. Additionally, this year the Graduate Geoscience Society again helped to run the state-wide National Geographic Bee

for grades 4-8 (organized by the Kentucky Geographical Alliance), with six faculty and five students involved in administering the event. The Bee was held for the fourth time at WKU, with 100 students and about 150 parents and teachers in attendance. Faculty are also active in the Kentucky Society of Professional Geologists, developing statewide initiatives to introduce students to the geological sciences. Two faculty are engaged in the Kentucky Geographical Alliance and the Science Alliance respectively; both initiatives are designed to help improve the content knowledge of K-12 teachers and to improve the geoscience knowledge base of students preparing to attend Kentucky universities. The Department remains hopeful that initiatives such as these will help to attract more students to the geosciences in the future.

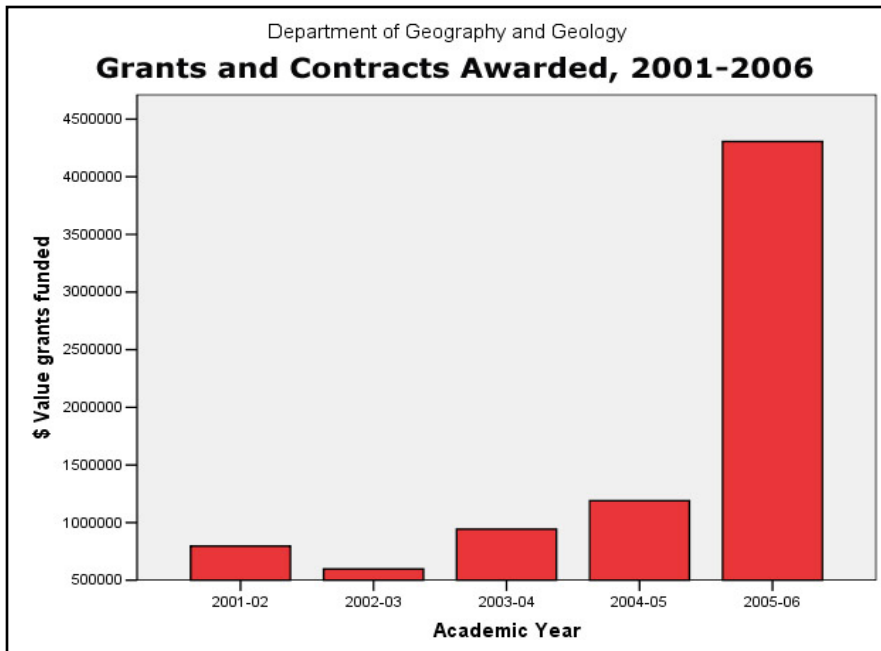
Finally, the Department developed a number of non-traditional courses to address the needs of graduate and non-geoscience students. An Historic Preservation course, cross-listed with Folk Studies attracted 10 students; an adjunct faculty member (originally from Nigeria) offered Geography of Africa (the first offering of this course in over a decade), cross-listed with the African-American Studies program, attracting 17 students; and an advanced graduate student revived a Human Ecology course (not taught in over 15 years) and offered it in the Fall and Spring semesters. A revamped Food and Agriculture course was offered in the Fall 2005 semester, and a special Leadership in Urban Geography course for Leadership Studies students was offered in both the Fall and Spring semesters. The Center for Cave and Karst Studies summer program (now in its 28<sup>th</sup> year) offered eleven different courses centered on Mammoth Cave. The Department also has tried to strengthen its offerings at the extended campuses, especially during the summer semester, and a complete general geography major has been available at the Glasgow campus since Fall 2005 to meet growing enrollment demands there.

Efforts also continue to improve timely graduation rates, with a “four-year program” guarantee in effect. If the student follows the program guidelines, graduation is possible within the four-year time period, with the Department guaranteeing to offer the courses necessary for that student’s program. A similar initiative is in effect for all graduate students, who are required to meet each semester with the Department Head to go over the degree program and to ensure that all program requirements are met in a timely manner. This past academic year, the Department contacted 10 students who were “at risk” of not completing their degree program, either because of a missing required course or for other reasons. This outreach program is designed to ensure that every major ultimately graduates from the program. This year, five students responded positively and are completing or have already completed their degrees. The Department aims to reduce the delinquency or drop-out rate in the program to less than 5 percent of the total number of majors over the next five years.

Evidence of success in developing the student body is provided by several representative vignettes about program graduates. This year, two graduate students (Shawn Marie Simpson and Jonathan Hall) have been chosen as ESRI scholarship recipients from Kentucky for the 2006 International GIS conference, following in the footsteps of Narcisa Pricope (2005), Shwu-Jing Jeng (2005) (now working fulltime for ESRI), Jeremy Weber (2004), Dan Taylor (2003), and Rhonda Pfaff Glennon (2002), who also works fulltime for ESRI. Jill Brown (MS 2002) has accepted a full-time position teaching geography at the Bowling Green Community College. Keith Milam (BS Geology 1997) completed his Ph.D. and is an assistant geology professor at Ohio University. John Hays (BS Geography 2002) works for the Georgia Environmental Protection Agency, and Josh Van Duzer (BS Geography 2002) finished his MS Planning degree at the University of Akron. Numerous students have completed GIS training and have started excellent careers in planning, exploration, consulting, and analysis, like Tim Rink (BS Geography 2003), who is now a GIS Analyst in Owensboro.

### **III. Assuring High-Quality Faculty and Staff**

During the just-completed academic year, faculty submitted grant and contract applications worth over \$5 million, a significant accomplishment (see table), with over \$4 million actually funded. Most of these grants and contracts have been submitted under Ogden College’s ARTP umbrella. Faculty solicited WKU *Action Agenda funds* to support replacement of aging GIS computer facilities, to renew GIS site licenses, to support study abroad programs, to enhance several research labs, and



to continue development of the MESONET, an advanced meteorological monitoring, data acquisition, and analytical system. External funds generated by the Hoffman Institute, Water Resources Program, Kentucky Climate Center, and the Center for Cave and Karst Studies from agencies such as the NSF, NASA, the Commonwealth of Kentucky, and other sources continue to help support graduate students, student-centered research, provide new equipment, and facilitate the development of research exchange programs in China, Puerto Rico, Chile, Indonesia,

and within the Commonwealth. Of particular note is the selection of Chris Groves to continue heading the renewed international UNESCO-funded project titled "Global Study of Karst Aquifers and Water Resources."

Several faculty were recognized locally, nationally, and internationally during the academic year. Rezaul Mahmood received the annual Ogden College Award for Excellence in Research and Scholarship, and also received the same award at the institutional level. Adjunct geology instructor Rick Scott was recognized as the Ogden College Adjunct Faculty award winner, and Sara Dalton was chosen by the SGA as its Ogden College Teacher of the Year.

Throughout the year, faculty from the Department have been featured in a variety of WKU and regional media, including stories in *Echo* magazine, *Western Scholar*, the *Bowling Green Daily News*, and in a number of other regional media outlets.

One new faculty (a meteorology and climatology expert) was hired in August 2005 to help further develop the atmospheric sciences program and to strengthen partnerships with other programs on campus. Another new faculty member has been recruited for the 2006-2007 academic year (from Ohio State) to strengthen the Department's City and Regional Planning program and to continue building relationships with community planners throughout the region. The Department *search committees addressed diversity and gender goals* during the recruitment process, contacting qualified individuals through listservs, conferences, and special mailings, and ultimately recommended the most qualified individual for the position. In the most recent search, a well qualified female candidate was offered the position and accepted. The Department has every expectation that the new generation of faculty will continue to strengthen the Department's accomplishments in scholarship, creative activities, and externally-sponsored research and grants.

Faculty continued to excel in scholarship, research, and professional development, convening and/or participating in myriad professional workshops and presenting approximately 40 papers at local, regional, national, and international conferences. Faculty also were significantly engaged with the local community, serving on committees, task forces, running for public office, participating in WKU-sponsored community outreach events such as the *Far Away Places* series at Barnes and Noble, sharing geoscience expertise on WKYU-FM's Midday Edition program, and giving talks at churches, community organizations, and for service groups. Two faculty also served as editor or co-editor of professional academic journals, eight faculty reviewed manuscripts for academic journals or publishers, one faculty authored a chapter in a textbook titled *Cities and Urban Geography in Latin America*, and another faculty co-authored a revised edition of the popular *Essentials in Physical Geography* textbook. Geography faculty research articles appeared in such diverse journals as the

*International Journal of Climatology, Environmental Management, Hydrological Processes, and Essential Sources in Cave Science*, among others. Twenty-three 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.

Faculty also gave over 60 academic and community talks during the academic year, including presentations at universities and conferences across the United States, in Latin America, China, and Europe (including Harvard, Vanderbilt, and Indiana). In addition, faculty visited more than 20 overseas locations for research, professional development, study abroad programs, professional study tours, meetings, and collaborative activities with other institutions (including Tanzania, the Bahamas, Jordan, Tunisia, Egypt, Greece, the Maldives, Malta, Croatia, Montenegro, Australia, China, Italy, Chile, Ukraine, Azerbaijan, the United Arab Emirates, Turkey, France, Wales, England, and Belgium). Four faculty led the Department's study abroad programs to Tanzania, the Bahamas, and Australia, the Department Head served as a Study Tour Lecturer on educational programs co-sponsored by the American Geographical Society to Europe, Africa, Asia, and the Middle East, and six faculty led field trips for students within the U.S. Indeed, the Department has lead the university in departmental Study Abroad program development and participation over the past decade, with eight faculty leading over 175 students to more than a dozen destinations around the planet, and it has the most globally focused faculty in the Commonwealth; they have visited over 125 countries on research, expedition, and lecture trips in recent years!

#### **IV. Enhancing Responsiveness to Constituents**

The Kentucky State Climatologist serves the public from the Department's Kentucky Climate Center and has provided invaluable service to the community over the past year in many different arenas. The KCC has been instrumental in developing the Kentucky Mesonet project, a state-wide initiative to build a sophisticated climate-data network for the Commonwealth. The Kentucky legislature approved the Kentucky Meosnet as the Commonwealth's official climatological center. The Kentucky Climate Center's website provides both real-time and archival weather-related data to visitors and it recorded over 10,000 visits during the year. Moreover, the WKU Weather Station hosted several dozen P-12 student visitor groups during the year. The State Climatologist also serves on the South Central Kentucky GIS Users Group, along with the GIS Director, and met several times with city and county agents and public officials for GIS and other planning needs. The Department's GIS faculty continue to be proactive in helping to coordinate a GIS technology advisory group in the region and in promoting GIS technologies in sustainable development practices. The core mission of the Department is to contribute to sustainable development in our community, region, state, and beyond through good management practices using such powerful analytical technologies as GIS.

Faculty continue to devote thousands of hours to the educational, social, cultural, and economic development needs of the city, county, region, state, and other countries. As noted above, several faculty have been recognized, in part, for service to the university (one faculty served as a Faculty Associate for FaCET) and community, and the GIS faculty serve on a number of regional GIS-related committees and workgroups. Faculty also advise the city's transport management committee, and others have been involved in various community projects in advisory capacities. Two faculty members continue to invest many hours in helping students at area P-12 schools develop portfolios in science, and two faculty offered a professional development workshop for pre- and in-service middle grades teachers on geological time. Over 1500 P-12 students were exposed to the geosciences during the academic year as a consequence of faculty involvement in outreach. These activities created contacts and relationships with students and teachers that may convince students to major in the geosciences eventually.

Public service, as exemplified by the Climate Center, continued to be a central pillar of the Department's contributions, with activities in 2005-2006 reaffirming the faculty's commitment to productive engagement with a wide variety of constituents. The Department, through the Center for Cave and Karst Studies, continued to pioneer interactive and demonstrative student and public learning activities at the Lost River Cave site. This valuable community resource has flourished in recent years with additional funds from the State, community, Western, and other donors, and it has

become one of the premier karst and wetlands educational resources in the region. Dozens of students and community activists are employed or volunteer time at the LRC site, providing learning opportunities for area P-12 schools, visitors, and post-secondary institutions. The Center for Cave and Karst Studies' Director travels the state and surrounding region promoting both the LRC resources and the Department's educational facilities.

Another initiative in enhancing responsiveness to constituents is the ongoing development of the Department's website ([www.wku.edu/geoweb](http://www.wku.edu/geoweb)). This website contains approximately 500 pages of information relating to the Department's educational, research, and service activities and it receives several hundred visitors each month. The Department regularly updates its site and makes every effort to ensure that all links are active and current. This has involved an investment of over 600 hours during the academic year. Students and other visitors have commented positively about the usefulness of the site's material, especially links to course syllabi, descriptions of all courses offered by the Department, detailed information about the Department's majors and minors, details about each faculty member's research activities, links to faculty websites, links to the Department research centers, online versions of the Department's alumni newsletter, and details of the Department's annual strategic planning.

Alumni development is an important source of funding for the Department and it also provides employment opportunities for future students. Many alumni in positions of leadership frequently contact the Department with information about job opportunities for graduating seniors. The Department circulates its annual Geogram newsletter to approximately 1,400 alumni, it hosts alumni and current students at the annual October Homecoming alumni reception, and it offers continuing education training in a variety of fields (Hazmat, Stormwater Mitigation, GIS, Karst Management, etc.). Last year, the Department received record unrestricted contributions from alumni and faculty (over \$12,000), and it hopes to break that record again this academic year. Earnings from endowments support student enrollment in field camps, help faculty and students attend more conferences and workshops, and provide significant support to the Department's programs overall.

## **V. Improving Institutional Effectiveness**

The Department continues to run efficiently and effectively. A new geology curriculum effective 2005-2006 has generated several new majors and enrollment in the BA options has exceeded expectations. At the graduate level, the Graduate Review workgroup continues to revise the geoscience-based curriculum designed to meet the demands of 21<sup>st</sup> century employers and to provide students with the skills necessary to be successful in their Ph.D. studies or in professional careers. A new Graduate GIScience Certificate debuted in Fall 2005, with 12 students successfully completing the requirements during the year. Two committees continue to address the physical, technological, and research needs of the Department. The Facilities and Technology committee continued to assess the efficient utilization of space, and made several recommendations to upgrade rooms and develop new labs for student research. A new 100-seat auditorium debuted in Fall 2005, shared by the three departments that occupy EST, and further space improvements are taking place during the 2006 summer, in part with Academic Quality funds. A third GIS lab with 20 new computers will come online in Fall 2006 and will be shared by AMS, Agriculture, and Geography & Geology. Renovations to several rooms in EST are underway this summer, as a result of funding from WKU's academic quality enhancement initiative and grant funds for the Mesonet project. The Research Facilities committee, comprising the POD directors and key researchers in the Department, continues to refine research synergies, funding needs, and student research opportunities and made recommendations concerning increased productivity and efficiency in research activities, along with significant collaboration with other academic departments and with external agencies.

The Department is developing its second five-year strategic plan for 2006-2011. This plan forms the basis for the Department's expansion in a number of important areas, including research, extramural funding, student engagement, and alumni relations. The Department seeks to double the level of financial support received from alumni over the coming years. The Department continues to participate proactively in all aspects of the institutional planning process, in the implementation of QEP strategies, and in promoting programs that help prepare students for success in a global society.