

## Unit Productivity Award Application Academic Year 2002-2003

**Academic Unit Name: Department of Geography and Geology**

**Department Head: David J. Keeling**

### Summary of Application (Key Indicators of Productivity for 2002-2003):

SUMMARY OF APPLICATION: (Highlight key indicators of productivity achievement during 2002-2003 with reference to attached criteria, especially to priority goals concerning documentation of quality of student learning and recruitment and retention.)

- 🌐 **47 students attended eight professional meetings and conferences, with 32 presenting research papers or posters.**
- 🌐 **40 students participated in departmental study abroad, field camps, and field trips during the year.**
- 🌐 **A \$100,000 endowment to support the Geology program was received this year.**
- 🌐 **The Department awarded 14 GIS Certificates this year, while another 25 students have completed half of the certificate requirements.**
- 🌐 **The Department “closed the loop” by using assessment data to revise and restructure a core course in the geography curriculum.**
- 🌐 **Faculty visited 15 overseas locations for research, professional development, meetings, study abroad programs, study tours, and collaborative activities.**
- 🌐 **The Department organized and hosted the annual National Geographic Bee, attended by 100 middle-grades students and 200 parents and teachers.**
- 🌐 **The Department organized and hosted an International Karst conference, attended by the world’s foremost karst scientists.**
- 🌐 **51 students were actively engaged in applied research under faculty supervision through the Programs of Distinction.**
- 🌐 **A Master’s student has been hired by ESRI, the world’s largest GIS company, after receiving a student scholarship to attend the annual conference.**
- 🌐 **Action Agenda funds were used to set up a new rain gauge monitoring system at Mammoth Cave National Park, and to purchase Kentucky Digital Maps for student and faculty research.**
- 🌐 **The Department’s Peer Tutor program is designed to help at-risk freshmen and sophomores in the general education classes.**
- 🌐 **New short courses for non-traditional and continuing education students and community members were offered during the Summer session.**

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FOR OFFICE USE ONLY: Data will be filled in by Institutional Research

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# of Majors	F 98	F 99	F 00	F 01	F 02
SCH, fall	F98	F 99	F 00	F 01	F02

# of Graduates (Most recent 5-year data for August/December/May graduations)

# of Faculty: \_\_\_\_\_ Full-time      \_\_\_\_\_ Part-time FTE  
 WKUSES Participation Rate:

## **Department of Geography and Geology Unit Productivity Award Application**

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

The primary student-learning goal of the Department for the 2002-2003 academic year has been to increase the number of students engaged in study-abroad programs, field camps, internships, and professional conference activities. We achieved our goal of 100 students engaged in these types of learning activities, the highest participation level in over a decade for the Department. The Department's long-term goal is to have every major engaged in a research-related activity that leads to study abroad, internship, or conference attendance 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 social and 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.

Twenty students participated in the Department's first study-abroad program last July and August to Australia. Throughout the 22-day trip, students focused on a variety of environmental and social issues, ranging from damage on the Great Barrier Reef to conflicts between aboriginal groups and local farmers over land rights, and they completed research papers based on original fieldwork. In May, eight students and two faculty drove 6000 miles across the U.S. southwest, studying environmental and cultural issues related to national park management and resource use. Eight students participated in the regular end-of-semester southeastern U.S. geology field trip, with another two students enrolled in the summer geology field camp run by Dr. Wulff in the western U.S., part of a consortium with the University of Iowa. A geoscience graduate student spent the Spring semester studying tourism-based economic development in Belgium, as part of a Gordon Ford College-run business exchange program, and he will incorporate the results of his research into a thesis this coming year. Another geoscience graduate student, funded by the Department, is conducting research in Penzance, England, this summer on accessibility and transportation issues. The Department hopes shortly to conclude an agreement with Oxford University, England, so that this student can spend the Spring 2004 semester working at Oxford on development issues.

This academic year, 51 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), a five-percent increase over last year. Moreover, dozens of students are employed by the Lost River Cave program as guides and assistants. The Department also has partnered with the Biology Department in a contract with Mammoth Cave National Park that allows 30 students to work with the U.S. Park Service on an ecological monitoring program. Students will have access to the Park's \$40,000 Polymerase Chain Reaction machine, providing them with valuable skills not available on campus.

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 is another important aspect of the learning process for students. Faculty worked hard this past year to encourage more students both to attend and to present research at conferences. Six students attended the Ninth Annual Science Conference at Mammoth Cave National Park in October, 2002, and presented their research. Later in October, six students presented research papers at the 114th annual Geological Society of America (GSA) meeting in Denver. Two students attended the 57<sup>th</sup> Southeastern Geographers meeting in Richmond, Virginia, in November, and seven students attended the 99<sup>th</sup> annual Association of American Geographers conference held in New Orleans this past March; three students presented research papers and posters at this meeting. Four students presented research papers and posters at the regional GSA meeting convened in Memphis, while another student presented his thesis research in Kansas City at the north-central regional GSA meeting, both held in March. Another nine students presented research papers at the annual Sigma Xi Research conference, convened at WKU in April. The year's conference activities ended on a high note, with the Department organizing and hosting the International Conference on Karst Hydrogeology and Ecosystems, attended by students and scientists from across the planet. Nine students attended the conference from the Department and several presented research papers.

Another major challenge during the past year has been to engage students more successfully with the new technologies, theories, and applications that are demanded by employers and society. The Department's mission is to develop an interdisciplinary approach to Geographic Information Sciences (GIS) that provides learning opportunities for students across the university and from all disciplines. Supported by *Action Agenda funds*, the GIS program continues to grow steadily, with 14 students now having completed the full GIS Certificate Program. Another 40 students are enrolled in the introductory GIS course for the Fall 2003 semester, while a further 25 students have completed half of the requirements for the GIS Certificate. The Department provides a full-time GIS lab manager/instructor, funded initially by *Action Agenda money*, and employs six students as hands-on GIS lab assistants. Another six students are engaged in GIS-related research, funded in part by a \$10,000 grant from Institutional Technology to begin a complete digitization of the campus. New 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, and other advanced equipment. Two students who presented a poster at the GSA and Sigma Xi conferences demonstrated particular skill with these technologies.

The Department's 12-hour GIS certificate program clearly is attracting new students to the discipline (10 new students this year declared GIS as a major or minor, along with two graduate students). The Department is also working closely with the Engineering, Architectural and Manufacturing Sciences, Biology, and Business departments to develop interdisciplinary opportunities incorporating GPS, GIS, and other land-mapping technologies. In addition, *the Department is collaborating* 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 the process of approval by the relevant university committees. Two new courses in global environmental change are in the approval stage, and seven one-hour "development" courses in basic geoscience (tornadoes, earthquakes, orienteering, etc.) have been created to help attract students to the geosciences. Coupled with the redesign last year of the Department's core educational objectives, new and enhanced program tracks in geography now *provide our students with a much higher level* of intellectual and career development. Every student majoring in the Department takes six foundation courses that provide them with basic GIS, statistical, scientific writing, research methodologies, and critical thinking skills. This set of courses should prepare students more rigorously for the advanced courses and is designed to *improve the retention rate of students in the program and to increase the graduation rate of majors*. About 25 percent of the Department's graduates in 2002-2003 had taken higher-level math, chemistry, and physics courses to support their major, especially those focusing on environmental management, geology, and climatology. The Department's goal is to reach 50 percent by 2006 in this area.

The Department has targeted the Cartographic Design for GIS course for *academic improvement* after student assessments, course evaluations, and faculty feedback from more advanced courses suggested significant flaws in both the pedagogy and the technology utilized. This course is a core component of the GIS Certificate Program and a required course for all geography majors. Assessment activities revealed significant weaknesses in the structure of the course and it is now being redesigned and assigned to a faculty member who has completed the GIS Certificate Program as part of her professional development. As an example of "*closing the loop*" between assessment and program quality enhancement, the restructuring of this specific course demonstrates how valuable regular assessment and refining of course content, pedagogy, and technology can be. The quality of the Department's major will be enhanced over the coming years as a consequence of this process. Changes in the structure of the geology major are also underway, driven by assessment feedback that suggests a need for an earth-science-focused track in geology for teachers and a non-professional track that would appeal to students who want a solid grounding in geology but do not

necessarily need the advanced math, physics, and chemistry courses required for professional certification.

## II. Developing the Student Body

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 map quizzes continue to show that the majority of students are unable to find their own state or county on a basic map, and few are able to engage competently with the basic elements of geoscience. Consequently, the drop-out or failure rate in lower-division classes continues to run over fifteen percent on average per course per semester. After introducing a *Peer Tutor Program* in 2001 designed to identify and help at-risk students, the Department focused its two Peer Tutors this year on students who failed their first exam or who showed signs of struggling with the introductory material. The tutors provided additional tutoring outside normal class hours, assisted in explaining key concepts, and offered assistance to students who failed to grasp the basic geoscience concepts. Although this program is only in its second year, results are encouraging. Approximately *40 students sought assistance* during the academic year, some on a regular basis, and the Tutors logged over 300 hours of student assistance. The Department especially relies on the 6th-week Freshman assessment program to identify and assist at-risk students and to aid in their retention.

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 holding steady – this despite a national trend of declines in science enrollment in recent years. At the end of the Spring semester, the Department recorded 172 majors in geography, 38 in geology, and 52 total minors. Of these, 14 graduated in May, with another 8 scheduled to graduate in August. The Department graduated 34 students from its major programs between August 2002 and May 2003. 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.

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 has prepared 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 193 student inquiries, resulting in at least seven students pre-declared as geography or geology majors for the Fall 2003 semester. Moreover, the Department has participated in all of the WKU-sponsored *recruitment fairs* held around the state, and it continues to recruit students at state and regional scientific meetings and conferences.

The Geography and Geology clubs play an important role in the recruitment, retention, and development of students. These two student-led organizations provide mentoring, peer support, research opportunities, seminars, and field-trip experiences for members. For example, through the efforts of the Geography club, seven students traveled to New Orleans in March to attend the annual conference of the Association of American Geographers, accompanied by five faculty. This is the largest contingent of students and faculty from the Department to attend a national geography

conference in over a decade. Students raised money for this trip by holding a bake sale, 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 raise money and foster interest in their activities through regular rock and gem sales, seminars, and tee-shirt sales, and regularly attend annual regional and national geology meetings and conferences. Additionally, this year the Geography Club sponsored and helped to run the state-wide National Geographic Bee for grades 4-8, with six faculty involved in administering the event. The Bee was held for the first time at WKU, with over 100 students and 150-200 parents and teachers in attendance. Faculty also are active in the Kentucky Geological Society, developing statewide initiatives to introduce students to the geological sciences. The Department is hopeful that recruitment initiatives such as these will help to attract more students to the geosciences in the future.

Another initiative in the recruitment, retention, and development of students is a focus on interdisciplinary studies. One of the greatest barriers to increasing the number of majors is the very rigid disciplinary "box" required by the administration in terms of credit hour, teaching load, and major allocations. Human-environment issues and problems are not one-dimensional and cannot be addressed by a single discipline, yet this is how Departments and programs are forced to operate. Geoscience faculty have worked closely with the departments of Biology, Agriculture, History, Business, Teacher Education, and AMS to find creative ways to engage students in interdisciplinary approaches to problem-solving. For example, this past spring, two students (one undergraduate and one graduate) worked with Dr. Meier in Biology on GIS-Biology research. The Department sees GIS and spatial technologies as a central element in building collaborative and cross-disciplinary experiences for students. Quality rather than quantity is the driving ideology behind these initiatives. It is preferable in society to have ten well-trained scientists who can apply a broad interdisciplinary approach to problems rather than one hundred narrowly-trained specialists who (a) cannot find employment or (b) cannot adequately address a problem.

Finally, the Department developed a number of non-traditional courses to address the needs of graduate students and others. A special seminar-based Urban Geography course was offered in the Spring semester (5 students), along with a special GIS summer course (4 students). The Department also has tried to strengthen its offerings at the extended campuses, especially during the summer semester, and a new full-time instructor for Glasgow will be employed this August 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, two 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. Last year, Rhonda Pfaff was chosen as the only ESRI scholarship student from Kentucky for the 2002 International GIS conference; based on her contributions at the conference, ESRI offered her an excellent job in California, which she accepted. Dan Taylor, a geoscience graduate student, was chosen for a 2003 scholarship, in part because of the reputation of the Department in preparing high-quality students. John Allen Glennon, the first recipient of the WKU Minton Award for graduate students, has been accepted into the Ph.D. program at UC Santa Barbara to study geoscience. Shana Restall, another geoscience graduate student, completed her first year in the highly competitive Ph.D. program at the University of Washington, Seattle, and is teaching a summer class for the Department this July. Undergraduate Brandon

Bratcher received a \$1000 scholarship from the Radio and Television News Directors Foundation to study broadcast meteorology this past year.

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

Three new faculty (a geologist, an environmental geographer, and a GIS Manager/instructor) were hired in August 2002 with expertise in “hard-rock” geology, environmental law, and GIS technologies respectively, and they have already demonstrated a strong commitment to enhancing the Department’s already excellent reputation in teaching, research, and service. One new faculty member was recruited for the 2003-2004 academic year (from Johns Hopkins University) to complete the generational restructuring of the Department. 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 last round of searches, a highly qualified female minority was offered a position, but she turned WKU down because of a below-benchmark salary offer, inadequate start-up funds, and poor institutional benefits. The Department has every expectation that the new generation of faculty will strengthen the Department’s accomplishments in scholarship, creative activities, and externally-sponsored research and grants.

During the just-completed academic year, faculty submitted grant and contract applications worth over \$1 million, a significant accomplishment. Many of these grants and contracts have been submitted under the Programs of Distinction umbrella. Faculty solicited *Action Agenda funds* to acquire the Kentucky Digital Vectorized Quadrangle series, a significant addition to the Department’s research and teaching technologies. Funds were also obtained internally to replace student computers in the meteorology lab and to develop a network of rain gauges and data loggers at Mammoth Cave National Park to record precipitation automatically. 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, England, and within the Commonwealth.

The Department’s senior geologist, Ken Kuehn, recognized last year as a *Distinguished University Professor* at Western, was featured in the Fall 2002 edition of *Echo Magazine*, along with two other articles about the Department. Nick Crawford was profiled in the Fall 2002 issue of *Western Scholar* in an article titled “Below the Surface.” Another of the Department’s geologists received a nomination for the Outstanding Public Service Award in Ogden College. In May, the *Bowling Green Daily News* featured Dr. Stuart Foster, the State Climatologist and Director of the Kentucky Climate Center, in an article on about research in climate at WKU. Finally, the Department Head contributed an article on Geographic Illiteracy to *Echo Magazine* in February. Indeed, the Department has been so prolific and successful this past year, especially in promoting its accomplishments, that the Department Head received two, not one, Baby Beanie Awards from the Provost in April!

Faculty continued to excel in scholarship, research, and professional development, convening and/or participating in over 20 professional workshops (including two in China, one at the USGS mapping center in South Dakota, one in San Diego organized by the American Council on Education, and two in Washington DC) and presenting approximately 50 papers at local, regional, national, and international conferences. Faculty also were significantly engaged with the local community, serving on committees, task forces, running for public office, participating in WKU-sponsored community outreach events such as the *Far Away Places* series at Barnes and Noble, sharing geoscience expertise on WKYU-FM’s Midday Edition program, and giving talks at churches, community organizations, and for service groups. Three faculty also served as editor or co-editor of professional academic journals, seven faculty reviewed manuscripts for academic journals or publishers, and one faculty is a co-author on a new textbook titled *Essentials of Physical Geography*. Faculty research articles appeared in such diverse outlets as the *Professional Geographer*, *Bulletin of the American Meteorological Society*, *Journal of Cave and Karst Studies*, *Ground Water*, and *The North Carolina*

*Geographer*, among others. Fifteen faculty research articles or book chapters are either currently in review, revision, or awaiting publication.

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

#### **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. Utilizing new GIS visual technologies and drawing on the assistance and skills of six undergraduate and graduate research assistants, the State Climatologist, along with two other faculty, provided climate-related data, expert testimony, prediction models, and other important information to myriad local and state constituents. The Kentucky Climate Center's website provides both real-time and archival weather-related data to visitors and it recorded over 8,000 "hits" during the year. Moreover, the WKU Weather Station hosted several dozen student visitor groups during the year. The State Climatologist also serves on the South Central Kentucky GIS Users Group and met several times with city and county agents and public officials for GIS and other planning needs. The Department's GIS faculty have taken the lead in helping to coordinate a GIS technology advisory group in the region and in promoting GIS technologies in sustainable development practices. Indeed, the core mission of the Department is to contribute to sustainable development in our community, region, state, and beyond through good management practices.

Public service, as exemplified by the Climate Center, continued to be a central pillar of the Department's contributions, with activities in 2002-2003 reaffirming the faculty's commitment to productive engagement with a wide variety of constituents. The Department, through the Center for Cave and Karst Studies, continues to pioneer interactive and demonstrative student and public learning activities at the Lost River Cave site. This valuable community resource has flourished over the past year 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 improvement to the Department's website ([www.wku.edu/geoweb](http://www.wku.edu/geoweb)). This website contains about 600 pages of information relating to the Department's educational, research, and service activities and it receives several hundreds of 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 500 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.

Faculty have cumulatively contributed thousands of hours to the educational, social, cultural, and economic development needs of the city, county, region, state, and other countries. Two faculty ran for public office last Fall in an effort to provide more scientific expertise in community decision-making, and two faculty continued involvement with the regional Transpark project, addressing issues

of hydrology, environmental impacts, pollution, subsurface drainage, and other key problems. Faculty also serve on the city's Storm Water Advisory Committee, and others have been involved in various community projects in advisory capacities. Two faculty members have invested many hours in helping students at area K-12 schools develop portfolios in science. These activities also help create contacts and relationships with students and teachers that may convince students to major in the geosciences eventually.

The Department has responded to constituent needs in the area of professional training, including short courses, expert advice, and technological support. Conferences, short courses, and special lectures on radon mitigation, GIS management, hazardous materials handling, storm-water mitigation, karst development, and water quality were offered during the year, with plans to develop more specialized programs in the future, especially in the area of water management, GIS planning, and radon mitigation.

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 1,200 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 \$7,500), and it hopes to break that record this academic year. Indeed, the Department recently received an unrestricted \$50,000 endowment from the Gildersleeve family (matched by \$50,000 from state funds) to help support students and faculty in the geology program. Earnings from the endowment will support student enrollment in field camps, help geology faculty attend more conferences and workshops, and will provide a boost to the overall program in geology.

## **V. Improving Institutional Effectiveness**

The Department continues to run efficiently and effectively. Six permanent workgroups exist, with each faculty member serving on two workgroups for the academic year. Membership on the workgroups is rotated every year to expose faculty to all facets of the Department's operations. The Undergraduate Review workgroup is charged with the task of continually examining and revising the curriculum, course offerings, and program specialties in order to provide the best possible learning experience for the students. At the graduate level, the Graduate Review workgroup developed a 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. Two workgroups addressed the physical, technological, and research needs of the Department. The Facilities and Technology workgroup continued to assess the efficient utilization of space, and made several recommendations to upgrade rooms and develop new labs for student research. The Research Facilities workgroup, comprising the POD directors and key researchers in the Department, examined 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. These recommendations are embedded in the Department's 2003-2004 strategic plan.

The last two workgroups encompass the promotion of the Department's activities and the development of funds. Activities of the Marketing and Promotions workgroup last year included developing a Powerpoint presentation highlighting the strengths of the Department, promoting its educational opportunities among its constituents, and marketing the types of programs and research opportunities available to students and other constituents. Finally, the Funds Development workgroup continued to refine a program to identify sources of external funds, to identify funds to endow a Chair in Geoscience, to develop better relationships with alumni, and to identify creative ways to use available development funds to support student-learning activities. This year, the Department received a \$100,000 endowment for the Geology program (see above), and contributions from alumni have increased in terms of the number of alumni contributing.