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UA66/8/3 Annual Report

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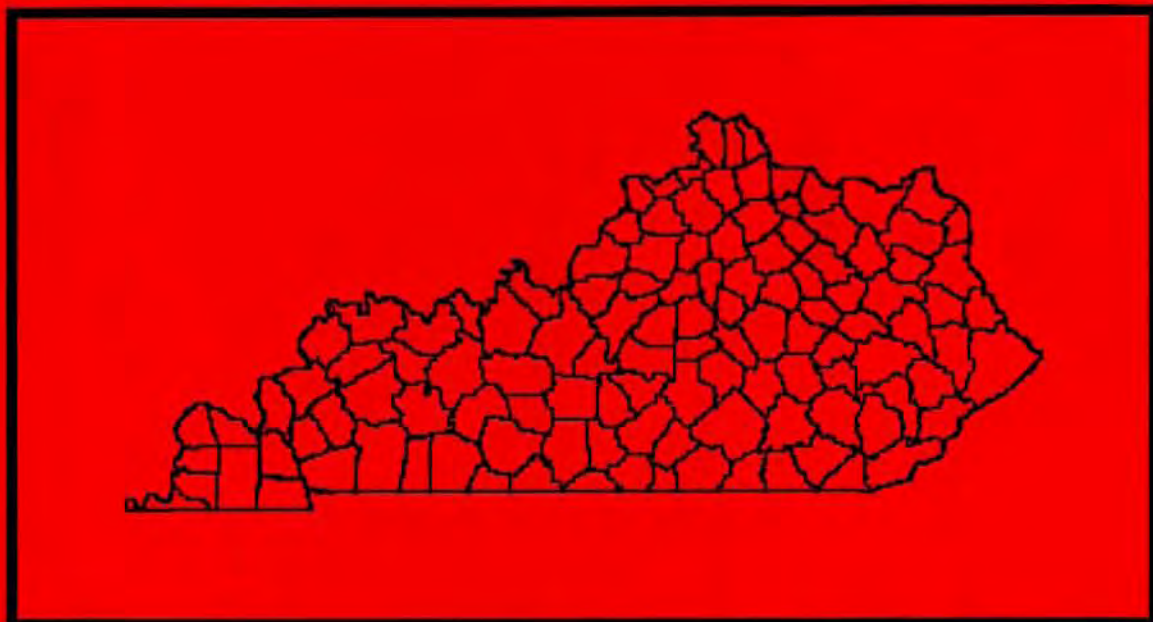
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Department of Geography and Geology
Western Kentucky University

Bowling Green, Kentucky 42101

ANNUAL REPORT 1993



July, 1994

DEPARTMENT OF GEOGRAPHY AND GEOLOGY

Annual Report 1993



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ACKNOWLEDGEMENTS

This report is dedicated to the faculty and students of the Department of Geography and Geology. Special thanks to Ms. Betsy Lowrey, our loyal secretary since January, 1970. Her patience and good humor are deeply appreciated. I would also commend Ms. Lisa Frye who left us for a better and more secure position in February. Her dedication and wit are missed.

Wayne Hoffman

1993 IN REVIEW

Dear Reader:

Faculty excellence in teaching, research, and public service continued in 1993. During the past year, faculty published 20 articles, 19 technical and consulting reports, and 9 abstracts. They presented 36 professional papers. For the five year period 1989-1993, faculty published 97 articles, 116 technical and consulting reports and 57 abstracts. (Table 1). Moreover, they presented 164 professional papers for the cited period. It was a particularly productive year for grants and donations of equipment. Over \$363,000 was secured during the year. Our five year total (1989-1993) in grants, contracts, and donated equipment is well over one million dollars (Table 2).

Students majoring and minoring in geography and geology continued to bring credit to the Department, College, and University. In 1993, students authored or co-authored 27 publications and presented 18 professional papers. For the five year period 1989-1993, students published 120 items and presented 75 professional papers.

Administratively we continued to work on reports justifying our existence. The Southern Association of College Accreditation Review (SAC) went quite smoothly with no serious questions raised on the departmental study either by the University or the visiting review team members. While the SAC review went nicely the Department and its programs did not fare as well when reviewed by the Higher Education Review Commission, (HERK). Governor Jones assembled a panel of legislators, government appointees, university presidents, and Board of Regent members to explore funding for higher education in the Commonwealth and "unnecessary duplication" of programs and course offered by the universities.

Numerous programs throughout Kentucky were terminated. They included the Department's Earth Science major and the Master of Science Degree in City and Regional Planning. While both programs had limited enrollments they offered students unique opportunities and were conducted at little or no real cost to the University and Commonwealth. We regret the loss of these offerings and believe that this termination will be reflected in lower levels of trained earth science teachers and city and regional planners in Kentucky.

In the personnel area, Dr. Noland Fields elected to take early retirement effective July 1, 1994. Noland came to the department in 1962. He provided excellent leadership in the geology area and effective instruction to thousands of students. Dr. Fields will continue teaching on a half-time basis for the next five years. Dr. Elizabeth McClellan was employed on temporary basis in 1993 to replace Dr. Jack McGregor. After a national search she has been employed on a permanent basis. Dr. Stuart Foster received tenure during the year and Dr. Deborah Kuehn was promoted to Associate Professor. Finally, Ms. Lisa Frye, our loyal secretary for the past several years, left to accept a higher paying position in Nashville. She is missed by all. Budget considerations dictated that Lisa not be replaced and we are back to being a one secretary department.

Three faculty were professionally recognized during the year. Dr. Albert Petersen received the University Library Award, Dr. James Davis was honored as an outstanding educator by the National Council for Geographic Education, and Dr. Nicholas Crawford was selected as the 1994 recipient of the Honorary Membership Award by the National Speleological Society (NSS). Nicholas was also awarded a Certificate of Merit for the Summer University in the Park Program by NSS.

We invite you to explore the remaining pages of this report. They document faculty dedication and productivity. As I complete my 18th year as Department Chair, I take increasing pride in the faculty, students, and alumni of this vital unit.

Wayne Hoffman
Wayne Hoffman
Department Chair

DEPARTMENT OF GEOGRAPHY AND GEOLOGY
NONINSTRUCTIONAL ACTIVITIES 1989 - 1993

TABLE 1

	1989	1990	1991	1992	1993	TOTAL
Publications	22	21	20	14	20	97
Technical and Consulting Reports	28	39	22	8	19	116
Abstracts	16	9	10	13	9	57
Papers Presented	38	26	33	31	36	164
Attendance at Professional Workshops	15	7	7	14	11	54
Attendance at Professional Meetings	55	46	47	53	51	252
Positions in Professional Organizations	14	15	12	20	21	82
Grants and Fellowships	25	18	21	30	25	119
Student Papers Presented	21	13	11	12	18	75
Student Publications	43	33	8	9	27	120

EXTERNAL GRANT, CONTRACT ACTIVITY, AND
DONATED EQUIPMENT 1989 - 1993

TABLE 2

School Year Funded	Number of Proposals	Number Funded	Amount
1989	14	12	\$ 496,937
1990	10	8	\$ 32,899
1991	12	9	\$ 76,007
1992	12	8	\$ 73,808
1993	20	9	\$ 363,556
Total	68	46	\$1,043,207

FACULTY AND STAFF

Full-Time Faculty

S. Reza Ahsan, Ph.D. (Florida), Professor. Cartography, Air Photo, Remote Sensing, South Asia, Eastern Africa, Caribbean.

James M. Bingham, Ph.D. coursework (Indiana State), Assistant Professor. Economic, Location Theory, Planning.

Glen Conner, M.S. (Western Kentucky), Associate Professor. Meteorology, State Climatologist.

Nicholas C. Crawford, Ph.D. (Clark), Professor. Hydrology, Groundwater, Karst Studies.

James L. Davis, Ph.D. (Northwestern), Professor. Urban, Transportation, North America.

Noland E. Fields, Jr., Ph.D. (Louisiana State), Professor. Environmental Geology, Sedimentary Geology, Paleontology.

Stuart Foster, Ph.D. (Ohio State), Associate Professor. Quantitative Methods, Location Analysis, Geographic Information Systems.

Christopher G. Groves, Ph.D. (Virginia), Assistant Professor. Geomorphology, Hydrology.

Wayne L. Hoffman, Ph.D. (Florida), Head, Professor. Urban, Economic, Planning.

David Keeling, Ph.D. (University of Oregon), Assistant Professor. Latin America, Regional, Urban, Transportation.

Deborah W. Kuehn, Ph.D. (Pennsylvania State), Associate Professor. Coal Geology, Organic Geochemistry, Sedimentology.

Kenneth W. Kuehn, Ph.D. (Pennsylvania State), Professor. Coal Geology, Coal Petrology, Stratigraphy.

Mark Lowry II, Ph.D. (Syracuse), Professor. Urban, Social, Planning.

Elizabeth McClellan, Ph.D., (University of Tennessee), Assistant Professor. Mineralogy, Petrology.

Conrad T. Moore, Ph.D. (U.C.L.A.), Professor. Resource Management, Biogeography, Environmental Perception.

Albert J. Petersen, Jr., Ph.D. (Louisiana State), Professor. Cultural Settlement Patterns, Historic Preservation.

Mary C. Prante, Ph.D. Candidate (Kansas), Instructor. Cartography, Physical Geography.

L. Michael Trapasso, Ph.D. (Indiana State), Professor. Climatology, Geomorphology, Remote Sensing.

Part-Time Faculty

Bobby Alford, M.A, Education/Geography, Western Kentucky University
Robert Druen, M.S., Education/Geography, Western Kentucky University
Rick Scott, Education/Earth Science, Western Kentucky University
Mark Simpson, ABD, Geography, Indiana State University
Gary Talley, M.S., Geography, Western Kentucky University
Jim Thomason, M.S., Geography, Texas A & M

Staff

Ms. Betsy Lowrey, Senior Departmental Secretary

Ms. Lisa Frye, Secretary, Center for Local Government, grant funded

EQUIPMENT PURCHASED - 1993-94

During the past academic year, the department purchased \$44,713 in equipment and software. Of this total \$6,567 was generated from the regular operating budget. The remaining \$38,416 was secured from external grants, the President's Unrestricted Fund, lapse salary from the Dean, or a special allocation made available by the President. The equipment purchased is as follows:

C-Band LNB	\$ 718
Macintosh LC 3	1,142
4MB Memory Upgrade	205
Laser Writer Printer	639
Mathco Processor	60
Color Monitor	411
Software (Spacestat)	200
Digital Plan Measure	131
Hewlett Packard 520 Desk Jet Printer	251
Apple/Macintosh Style Writer Printer	251
EGA LCB Plate	200
Zenith Supersport 286 Computer	800
Atlas GIS, Version Educational Lab Pack	195
Large Map Order	1,382
Global Positioning System	10,264
Display Cases (2)	3,656
Art-Getter Mac/IBM 30 Bit Color Scanner	3,795
Portable Computer - IBM Think Pad	4,000
IBM Interface Kit	349
Scantron Test Scoring Machine	1,490
Weather Dials	1,430
Raytech 10" Combination Slab Saw & Trim Saw	925
Gateway 2000, P4D-66 Computers (2)	4,688
Gateway 2000, 486DX-33 Mini Desktop (2)	1,470
4MB Simm Upgrade (2)	300
Climate Data CD-Rom	295
Fisher Centrifuge IEC Clinical Model	598
Okidata 320 Printer GTSI	313
Epson Printer LQ 1070 + GTSI	398
4-MB Simm for DOS Ram (4)	658
4-MB Simm Kit for Mac II SI (4)	584
Floating Point Unit for Mac II SI	106
Canvas for Windows	156
Art-Getter IBM 24-Bit Enhanced Color Scanner	1,895
Mac SCSI Interface Kit	349
Hewlett-Packard Color Printer (DOS)	409
Zenith 4 Mg Simm Chip	184
TOTAL	\$44,713

FACULTY PUBLICATIONS

- Bingham, James and Wayne Hoffman, "The 1988 Tourist and Travel Industry in Kentucky: A Spatial Analysis," *Proceedings*, Geography Section, KAS November, 1993, pp.1-11.
- Bingham, James, Editor, *Proceedings*, Geography Section, 1992, Kentucky Academy of Science, 1993.
- Conner, Glen and others, "Mean 1961-1990 Temperature and Precipitation over the Upper Midwest," *Midwestern Climate Center Research Report 92-01*, 1992.
- Crawford, N.C. , "The Karst Hydrogeology of the Cumberland Plateau Escarpment of Tennessee: Karst Valley Development in the Lost Cove Area, Franklin County, Tennessee," Tennessee Division of Geology *Report of Investigations*, No. 44, Part III, 1992, 21 p.
- Crawford, N.C. and others, "Tennessee's Superconducting Super Collider Proposal: A Proposed Large Scale Surface/Subsurface Construction Project Located in a Karst Environment," *Proceedings*, 1993 Groundwater Monitoring and Remediation Conference, Oak Ridge, Tennessee, 1993.
- Crawford, N.C. and C.S. Ulmer, "Groundwater Investigations to Determine Contaminant Movement in the Karst Aquifers of the Lewisburg, Tennessee Area," in Beck, B.F. (ed.) *Applied Karst Geology, Proceedings*, Fourth Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, Panama City, Florida, 1993, pp. 79-87.
- Crawford, N.C. and C.S. Ulmer, "Hydrogeologic Investigations of Contaminant movement in Karst Aquifers in the Vicinity of a Train Derailment near Lewisburg, Tennessee," *Environmental Geology*, Vol. 22, No. 4, 1993.
- Crawford, N.C. and J. E. Mylroie, "Groundwater Flow in the Vicinity of Gracy, Eastern Trigg County, Kentucky," *Bulletin*, Western Kentucky Speleological Survey, 1993.
- Davis, James L. and Nancy H. Davis, "Mark Twain's Hannibal and William Faulkner's Oxford," *Proceedings* Geography Section, Kentucky Academy of Science, 1993, pp. 12-21.
- Davis, James L. and Wayne L. Hoffman, "Program Assessment and Strategic Planning: Guidepoints to Success," *National Issues in Higher Education*, Vol. 41, September 1993, pp. 159-167.
- Groves, C.G. and C. Wicks, "Acidic Mine Drainage in Carbonate Terrains: Geochemical Processes and Rates of Calcite Dissolution." *Journal of Hydrology*, Vol. 146, 1993, pp. 13-27.
- Groves, C.G. and A.D. Howard, "Network Flow Modeling of Developing Karst Aquifers: Selective Enlargement of Competing Flowpaths," *Cave Research Foundation Annual Report*, 1992, 1993, pp. 25-27.

- Hoffman, Wayne and James L. Davis, "Program Assessment and Strategic Planning: Guidepoints to Success," *National Issues in Higher Education*, Vol. 41, September 1993, pp. 159-167.
- Hoffman, Wayne and James Bingham, "The 1988 Tourist and Travel Industry in Kentucky: A Spatial Analysis," *Proceedings*, Geography Section, Kentucky Academy of Science, Ashland, Kentucky, 1992, pp. 1-11.
- Keeling, David J., "Economic and Social Restructuring in Argentina: Is the Medicine Killing the Patient?" *Intercambio Internacional*, 12(1): 1993, pp. 1-3.
- Keeling, David J., "TimeSpace Maps and Text," Prepared for: Roccatagliata, J.A., Transporte: Algunas consideraciones actuales. *Geografía Económica Argentina*, ed. J.A. Roccatagliata (Buenos Aires: El Ateneo), 1993, pp. 233-37.
- Keeling, David J. and A.B. Murphy, *Oregon's International Trade: A Geographic Profile of Export Destinations, 1987-1991*. Portland: Oregon Geographical Alliance and the Oregon International Trade Institute, 1993, 212 p.
- Lowry, Mark II, "Argentina's Madres de La Plaza de Mayo: Relentless Persistence - Lingering Hope," *Intercambio Internacional*, December 1993, pp. 3-5.
- Moore, Conrad and Celia Campbell, "Regional Wind Patterns in the Contiguous United States," *Proceedings*, Kentucky Academy of Science, Geography Section 1993, pp. 22-31.
- Trapasso, L. Michael and Kelly Kaletsky, "Tourist Activities and the Microclimate of Mammoth Cave, Kentucky," *Proceedings*, XI International Congress of Speleology, Beijing, P.R. China, 2-8 August, 1993, pp. 188-191.

TECHNICAL REPORTS

- Conner, Glen, "Climatic Extremes in Kentucky," Kentucky Climate Center Publication No. 28, June 1993, 12 p.
- Crawford, N.C., "Investigation of Karst Groundwater Flow and the Discharge of PCBs from Arnemann Spring Karst Groundwater Basin, Simpson County, Kentucky," prepared for Kendall Corporation, 1993, 147 p.
- Crawford, N.C., D. Wilhite, C. Anderson, R. Hillard, R. Wilhite, M. Turner, and J. Wood, "Groundwater Flow in the Vicinity of Philips Lighting Company, Danville Boyle County, Kentucky," prepared for GEI Consultants, Inc., 1993, Volumes I, II, and III, 132+ p.
- Crawford, N.C., "Groundwater Flow in the Vicinity of the Franklin, Kentucky Landfill," prepared for GeoTrans, Inc. 1993, 9 p.
- Crawford, N.C., "Groundwater Flow in the Vicinity of Philips Lighting Company, Danville, Boyle County, Kentucky, Phase II," prepared for GEI Consultants, Inc., 1993, 196 p.
- Crawford, N.C., "Sinkhole Collapse Under Super 8 Motel, Bowling Green, Kentucky," prepared for Super 8 Motel, prepared by Center for Cave and Karst Studies, Department of Geography and Geology, Western Kentucky University, 1993, 56 p.
- Crawford, N.C. and T.E. Slattery, "Dye Trace to Determine if Groundwater from the Gray PCB Site is Flowing into Blue Lake, A Supplemental Water Supply for Hopkinsville, Kentucky," prepared for Roy F. Weston, Inc. and U.S. Environmental Protection Agency, November 23, 1993, 84 p.
- Crawford, N.C. and W. D. Howcroft, "Potential Sources of Additional Water for Auburn, Kentucky," prepared for Auburn, Kentucky, May, 1993, 132 p.
- Crawford, N.C., "Groundwater Flow in the Vicinity of Wagon Master Truck Stop, Horse Cave, Hart County, Kentucky," prepared for Veritech Environmental Services, October, 1993.
- Crawford, N.C. "Dye Traces to Determine Groundwater Flow in the Vicinity of the Collis Factory, Elizabethtown, Kentucky," prepared for Heritage Remediation/Engineering, Inc. November, 1993.
- Crawford, N.C. "Laboratory Analysis of Activated Charcoal Dye Receptors Performed on a Shimadzu Spectrofluorophotometer for a Dye Trace of Groundwater Flow Performed at the Masland Site by R.E. Wright Associates," prepared for R.E. Wright Associates, November, 1993, 10+ p.
- Hoffman, Wayne, Editor, Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, 260 p.
- Hoffman, Wayne, "Landuse Element," Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, pp.120-153.
- Hoffman, Wayne, Editor, BRADD Data Book, 1994, Center for Local Government, Western Kentucky University, 1993, pp. 257 p.

- Hoffman, Wayne, Editor, Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, 215 p.
- Hoffman, Wayne and Thomas Tweddell, "Landuse Element, " Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp.104-131.
- Hoffman, Wayne, Editor, Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, 357 p.
- Hoffman, Wayne and Melanie Neuber, "Current Population and Projection," Comprehensive Plan Update, 1993, Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp.76-110.
- Hoffman, Wayne, "Landuse Element," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp. 147-199.

ABSTRACTS

- Fields, Noland and Terry L. Wilson, "Earth Science Education in a Collaborative System - Geoscientists, Science Educators, and Science Teachers," Geological Society of America, *Abstracts*, Vol. 25, No. 6, September, 1993, Page A A136.
- Foster, Stuart and Mark Lowry II, "Evaluating Segregation Using Spatially Continuous Observational Units," Association of American Geographers, *89th Annual Meeting Abstracts*, 1993, pp. 74-75.
- Keeling, David, "Training for the 21th Century: Spatial and Temporal Implications of HSST," Association of American Geographers, *89th Annual Meeting Abstracts*, 1993, p. 120.
- Kuehn, K.W., Hower, J.C., Wild, G.D., and Parekh, B.K., "Efficacy of Oil Agglomeration for Beneficiation of Ultrafine and Micronized Coals," The Society for Organic Petrology, *Abstracts and Program for the Tenth Annual Meeting*, ISSN 1060-7250, v. 10, 1993, pp. 65-66.
- Kuehn, Kenneth, "Prospects for Utilization of Ultrafine and Micronized Coals," Kuehn, K.W. 1993. Kentucky Academy of Science." *Geology Section Abstracts and Program*. Seventy-ninth Annual Meeting, October 21-23, 1993.
- Lowry, Mark II and Stuart Foster, "Evaluating Segregation Using Spatially Continuous Observational Units, Association of American Geographers, *89th Annual Meeting Abstracts*, 1993, pp. 74-75.
- McClellan, Elizabeth and R.D. Hatcher Jr., "Geochemical Evidence for Subduction-related Volcanism in the Trondheim Nappe Complex, Central Norwegian Caledonides," Geological Society of America, *Abstract with Programs*, v. 25, p. 56.
- Moore, Conrad, "Regional Drought Seasonality in the Contiguous United States," Association of American Geographers, *89th Annual Meeting Abstracts*, 1993, p. 170.
- Trapasso, L. Michael and Kelly Kaletsky, 1993, Measurement of the Effects of Food Preparation Activities on the Microclimate of Mammoth Cave, Kentucky, Association of American Geographers, *89th Annual Meeting Abstracts*, 1993, p. 238.

PAPERS PRESENTED

- Bingham, James (with Wayne L. Hoffman), "Kentucky's Journey to Work 1970-1990: A Comparative Analysis," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Conner, Glen, "Latitudinal Variation in Consecutive Days Precipitation," Geography Section, Annual Meeting, Kentucky Academy of Science, Georgetown College, October, 1993.
- Crawford, N.C., "Determining Groundwater Flow Directions, Monitoring Locations and Sampling Frequencies at Hazardous Waste Sites on Karst Terrane without Installing Monitoring Wells," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Crawford, N.C. and C.S. Ulmer, "Groundwater Investigations to Determine Contaminant Movement in the Karst Aquifers of the Lewisburg, Tennessee Area," Fourth Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, Panama City, Florida, January, 1993.
- Crawford, N.C., "Groundwater Problems Associated with Agricultural Activities," invited paper, Symposium on Environmental Concepts in Agricultural Education, Louisville, April, 1993.
- Crawford, N.C., "Environmental Issues Associated with Groundwater Problems in Karst Terrane," invited paper. The 1993 Groundwater Monitoring and Remediation Conference, Oak Ridge, Tennessee, September, 1993.
- Davis, James L. and Wayne L. Hoffman, "Program Assessment and Strategic Planning: Guidepoints to Success," National Meeting, Academic Chairperson Conference, Orlando, Florida, February, 1993.
- Davis, James L. and Nancy H. Davis, "Robert Penn Warren's Jeremiah Beaumont and Complexities of Place/Space," National Meeting, American Culture Association, New Orleans, Louisiana, April, 1993.
- Davis, James L., "Transportation Facilities Analysis of Warren County, Kentucky," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Fields, Noland and Terry Wilson, "Earth Science Education in A Collaborative System - Geoscientists, Science Educators and Science Teachers," Annual Meeting, Geological Society of America, Boston, Massachusetts, October, 1993.
- Foster, Stuart and Mark Lowry II, "Evaluating Segregation Using Spatially Continuous Observational Units," Annual Meeting, Association of American Geographers, Atlanta, Georgia, April, 1993.
- Foster, Stuart and Mark Lowry II, "A New Approach to Measuring Segregation," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.

- Groves, C.G. and A.D. Howard, "Network Modeling of Developing Karst Aquifers: Selective Enlargement of Competing Flowpaths," American Geophysical Union, Baltimore, Maryland, May, 1993.
- Groves, C.G. and A.D. Howard, "Network Modeling of Developing Karst Aquifers: Selective Enlargement of Competing Flowpaths," National Speleological Society, Pendleton, Oregon, August, 1993.
- Groves, C.G. and J.R. Wells, "Recent Cave Exploration in the Central Kentucky Karst," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Groves C.G. and J.R. Wells, "Exporation of Hidden River Cave, Hart County, Kentucky," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Hoffman, Wayne and James Davis, "Program Assessment and Strategic Planning: Guidepoints to Success," Academic Chairperson Conference, Orlando, February, 1993.
- Hoffman, Wayne and James Bingham, "Kentucky's Journey to Work 1970-1990: A Comparative Analysis," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Keeling, David, "Global Links to Global Cities: Transport's Role in the World City System," World Cities in a World System, International Conference, Washington, D.C., April, 1993.
- Keeling, David, "Developing MERCOSUR: Can Argentina and Brazil Replicate the European Common Market?" Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Keeling, David, "Training for the 21st Century: Spatial and Temporal Implications of HSST," Annual Meeting, American Association of Geographers, Atlanta, Georgia, April, 1993.
- Keeling, David, "Hyperregions and the Role of Transport Networks," Annual Meeting, Southeastern Division of the AAG, Greensboro, North Carolina, November, 1993.
- Kuehn, Deborah and Michael Sykes, "Paleontology and Identification of a Newly Exposed Roadcut West of Auburn, Kentucky," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Kuehn, K.W., Hower, J.C., Wild, G.D., and Parekh, B.K., 1993. "Efficacy of Oil Agglomeration for Beneficiation of Ultrafine and Micronized Coals," The Society for Organic Petrology, Tenth Annual Meeting, Norman, Oklahoma, October 1993.
- Kuehn, K.W., 1993, "Prospects for Utilization of Ultrafine and Micronized Coals," Kentucky Academy of Science, Seventy-ninth Annual Meeting, Georgetown, October, 1993.
- Lowry, Mark II and Stuart Foster, "Evaluating Segregation Using Spatially Continuous Observational Units," Annual Meeting, Association of American Geographers, Atlanta, Georgia, April, 1993.

- Lowry, Mark II and Stuart Foster, "A New Method of Measuring Segregation," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Lowry, Mark II, "Cotopaxi and Chimborazo: Majestic Mountains of Ecuador," Annual Meeting, Midwestern Association of Latin American Studies, Dayton, Ohio, November, 1993.
- McClellan, E.A. and R.D. Hatcher, Jr. , "Geochemical Evidence for Subduction-related Volcanism in the Tondheim Nappe Complex, Central Norwegian Caledonides," Southeastern Section Meeting, Geological Society of America, Tallahassee, Florida, April, 1993.
- McClellan, E.A., "The Einunnfjellet Dome, South-central Norway: A Glimpse into an Orogen," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Moore, Conrad, "Regional Drought Seasonality in the Contiguous United States," Annual Meeting, Association of American Geographers, Atlanta, Georgia, April, 1993.
- Moore, Conrad, "Inverse Relationships Between Between Monthly Wind Velocities and Precipitation in the United States and Pacific Basin," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.
- Prante, Mary (Wakefield Dort Jr. co-author), "Beyond the Fringe: Sioux Quartzite in Kansas," Association of American Geographers, Annual Meeting, Atlanta, Georgia, April, 1993.
- Trapasso, L.M. and Kelly Kaletsky, "Microclimates within Mammoth Cave," Annual Meeting, Association of American Geographers, Atlanta, Georgia, April, 1993.
- Trapasso, L.M. and Kelly Kaletsky, "Microclimate of Mammoth Cave," 11th International Congress of Speleology, Beijing, P.R. China, August, 1993.
- Trapasso, L.M., "Presentation on the Falaj System of Oman," Annual Meeting, Kentucky Academy of Science, Georgetown, October, 1993.

INTERNAL GRANTS - 1993

NAME	SOURCE	PURPOSE	AMOUNT
James L. Davis	Faculty Development Grant	Travel	\$ 225
James L. Davis	Presidents Unrestricted Grant	Travel	225
Glen Conner	Faculty Development Grant	Travel	70
Nicholas Crawford	Presidents Unrestricted Grant	Equipment	1,500
Noland Fields	Faculty Development Grant	Travel	150
Stuart Foster	Faculty Development Grant	Travel	60
Christopher Groves and Nicholas Crawford	WKU Faculty Excellence Grant	Develop a Geomorph/ Hydrology Lab Facility	2,800
Christopher Groves	Faculty Development Grant	Travel	250
Christopher Groves	President's Unrestricted Grant	Travel	125
Debbie Kuehn	Faculty Research Grant	Research	825
Debbie Kuehn	President's Unrestricted Development Fund	Equipment	1 ,469
Kenneth Kuehn	Faculty Development Grant	Travel	250
Mark Lowry II	Faculty Development Grant	Travel	125
Conrad Moore	Faculty Development Grant	Travel	200
Michael Trapasso	Faculty Development Grant	Travel	175
TOTAL			\$8,449

EXTERNAL GRANTS AND EQUIPMENT DONATIONS - 1993

NAME	SOURCE	PURPOSE	AMOUNT
Glen Conner	Midwestern Climate Center	Research	\$ 5,060
Glen Conner	National Climatic Data Center	Research	3,460
Glen Conner	Kentucky Division of Water	Research	3,711
Glen Conner	US Bureau of the Census	Computer Equipment	320,000
Nicholas Crawford	Weyerhaeuser Corporation	Hydrology Equipment Donation	10,000
Wayne Hoffman	Tennessee Valley Authority Census Project (via Institute for Economic Development)	Research	2,500
Wayne Hoffman	BRADD	Revision of BRADD Data Book	5,000
Kenneth Kuehn	Malcolm Arnett Collection	Donation of Mineral Specimens	8,700
Beth McClellan	Geological Society of America	Travel	125
Albert Petersen	National Geographic Society	Kentucky Geographic Alliance Operating Grant	5,000
TOTAL			\$363,556

SERVICE TO PUBLIC SCHOOLS AND TEACHERS

- | | |
|---------------------|--|
| Glen Conner | -Presented Kentucky Climate Center Activities to a Canadian High School group
-Science Days |
| James Davis | -Judge, Kentucky Geography Bee |
| Noland Fields | -Rocks and Minerals Program, Potter-Gray Elementary School
-Rocks and Minerals Program, Dishman-McGinnis School
-Science Writing Program, West Hardin Middle School
-Science Days |
| Stuart Foster | -Science Days |
| Chris Groves | -Presented a talk on caves to 3rd-5th graders, Cumberland Trace Elementary
-Gave lectures and tours about caves and groundwater to several elementary school groups at Lost River Cave
-Assisted in development of geologic classroom activities, Warren East High School |
| Wayne L. Hoffman | -Judge, Kentucky Geography Bee, Louisville, April, 1993
-Science Days |
| David Keeling | -Science Days |
| Deborah Kuehn | -Identification of Minerals, 4-H Home School Club
-Coordinator, Regional Junior High and High School Science Olympiad
-Rock Identification, Dishman-McGinnis Elementary School
-Dinosaur Lecture, Cumberland Trace Elementary School
-Reviewer of top Kentucky Junior Academy of Science papers
-Science Days |
| Kenneth Kuehn | -Rock and mineral study for the Annual High School Science Olympiad, Greenwood High School, Bowling Green, Kentucky, March 1993
-Science Days |
| Elizabeth McClellan | -Science Days |
| Conrad Moore | -Science Days |

- Albert J. Petersen
- Moderator, Geography Bee, National Geographic Society
 - Kentucky Public School Teacher Geography Retreat, Bardstown
 - Geography Alliance Presentation, Apollo High School, Owensboro
- Mary Prante
- Exploring Topographic Maps, hands-on project at St. Joseph's School
- L. Michael Trapasso
- Science Fair Judge for Geosciences S. Kentucky Regional Science Fair
 - Science Fair Judge for American Meteorological Society, S. Kentucky Regional Science Fair
 - Judge for the Kentucky State Geography Bee,
 - Judge, Junior Kentucky Academy of Science Meeting, Western Kentucky University
 - Presentation concerning the Mayan Civilization, Bullitt County Central High School
 - Amazon Slide Show Presentation, Butler County Middle School
 - Multiple Tours of College Heights Weather Station, Hilltopper Science Days

FACULTY ATTENDANCE AT PROFESSIONAL MEETINGS

National Geographic Society Seminar, Albuquerque, New Mexico, January, 1993.
Petersen*.

Fourth Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, Panama City, Florida, January, 1993. Crawford*.

Tenth Annual Academic Chairperson Conference, Orlando Florida, February, 1993. Davis,*
Hoffman*.

Sigma Xi, National Meeting, San Francisco, California, February, 1993. Conner*.

The Society for Organic Petrology (International) Mid-year Business Meeting, Plano, Texas, March, 1993. K. Kuehn*.

Michigan Basin: Its Geology and Resources, sponsored by Geological Survey of Michigan (National), Lansing, Michigan, March, 1993. K. Kuehn*.

Association of American Geographers, Annual Meeting, Atlanta, Georgia, April, 1993.
Foster*, Keeling*, Lowry*, Moore*, Prante*, Trapasso*.

American Culture Association, New Orleans, Louisiana, April, 1993. Davis*.

Symposium on Environmental Concepts in Agricultural Education, Louisville, Kentucky, April, 1993. Crawford*.

Geological Society of America, Southeastern Section, Tallahassee, Florida, April, 1993.
McClellan*

World Cities in a World System, International Conference, Washington, D.C., April, 1993.
Keeling*.

Washington Meeting, National Association of Development Councils, April, 1993.
Hoffman.

Midwestern State Climatologists Meeting, Champaign, Illinois, May, 1993. Conner.

American Geophysical Union, Spring Meeting, Baltimore, Maryland, May, 1993. Groves.*

Governors Local Issues Conference, Ft. Mitchell, June, 1993. Hoffman.

American Association of State Climatologists, Annual National Meeting, Coeur d'Alene, Idaho, July, 1993. Conner.*

National Council for Geographic Education, Halifax, Nova Scotia, July, 1993. Petersen.

Midwestern State Climatologists Meeting, Champaign, Illinois, August, 1993. Conner.

National Speleological Society, National Meeting, Pendleton, Oregon, August, 1993.
Groves.*

Eleventh International Congress of Speleology, Beijing, P.R. China, August, 1993.
Trapasso.*

The 1993 Groundwater Monitoring and Remediation Conference, Oak Ridge, Tennessee,
September, 1993. Crawford*.

Geological Society of Kentucky, Annual Meeting, Louisville, Kentucky, September, 1993.
D. Kuehn, K. Kuehn.

Kentucky Academy of Science, Annual Meeting, Georgetown, Kentucky, October, 1993.
Bingham*, Conner*, Crawford*, Davis*, Foster*, Groves*, Hoffman,* Keeling*, D.
Kuehn*, K. Kuehn*, Lowry*, McClellan*, Moore*, Prante*, Trapasso*.

South Central Regional APA Conference, Nashville, Tennessee, October, 1993. Hoffman.*

Geological Society of America, National Meeting, Boston, Massachusetts, October, 1993.
Fields,* McClellan.

The Society for Organic Petrology (International), 10th Annual Meeting, Norman,
Oklahoma, October, 1993. K. Kuehn.*

National Association of Regional Councils, Annual Meeting, San Antonio, Texas, October,
1993. Hoffman.

Midwestern Association of Latin American Studies, Dayton, Ohio, November 1993.
Lowry.*

Southeastern Division of AAG, Greensboro, North Carolina, November, 1993. Keeling,*
Prante.

*Indicates active participation as paper presentor, officer, or some other significant
activity.

FOREIGN TRAVEL BY FACULTY

Christopher Groves	- Traveled to New Zealand and Fiji Islands, December 1993-January 1994
Mark Lowry II	- Ecuador - December, 1993 - January, 1994
L. Michael Trapasso	- United Arab Emirates - China

PROFESSIONAL WORKSHOPS ATTENDED

- Reza Ahsan -Science Grant Application Workshop, OCSTH, June, 1993.
- Glen Conner - National Climatic Data Centers Exchange Program, Asheville, North Carolina, 1993.
 -"Ethics and Science," Sigma Xi, San Francisco, February, 1993
 -"Science Education," Sigma Xi, San Francisco, February, 1993
- Nick Crawford -The Hydrology and Engineering Geology of Karst Terranes Workshop, sponsored by Institute for Geotechnology, University of Tennessee and P.E. LaMoreaux and Associates, Inc., Oak Ridge, Tennessee, September, 1993.
- Christopher Groves -The Hydrology and Engineering Geology of Karst Terranes Workshop, sponsored by Institute for Geotechnology, University of Tennessee and P.E. LaMoreaux and Associates, Inc., Oak Ridge, Tennessee, September, 1993.
- Wayne L. Hoffman -Man and the Biosphere Workshop, Estes Park, Colorado, December 1993
- David Keeling -"Integrating Interdisciplinary Approaches to City and Regional Planning in Argentina," funded by the government of Argentina and organized by the Subsecretaria de Acción de Gobierno, Buenos Aires, Argentina, April, 1993
- Kenneth Kuehn -"Seven Principles for Good Practice in Undergraduate Education," WKU, September, 1993.
 -Petroleum Geochemistry for Exploration Geologists and Geochemists," University of Oklahoma, 1993.
- Mary Prante -Project GEOSIM, SEDAAG, Greensboro, North Carolina, November, 1993

**PROFESSIONAL WORKSHOPS CONDUCTED,
PRESENTATIONS AT WORKSHOPS AND
FIELD TRIPS CONDUCTED**

Nicholas Crawford

- Organized Karst Hydrology Workshop sponsored by Center for Cave and Karst Studies and U.S. Environmental Protection Agency, Bowling Green, Kentucky, February, 1993.
- "Dye Tracing in Karst Aquifers," The Hydrogeology and Engineering Geology of Karst Terranes Workshop, sponsored by Institute for Geotechnology, University of Tennessee and P.E. LaMoreaux and Associates, Inc., Oak Ridge, Tennessee, September, 1993.
- "Dye Tracing Techniques for Karst Aquifers," Karst Hydrology Workshop, sponsored by U.S. Environmental Protection Agency and Center for Cave and Karst Studies, Bowling Green, Kentucky, February, 1993.
- "Emergency Response Procedures for Spills or Leaks of Hazardous Liquids Upon Karst Terranes," Karst Hydrology Workshop, sponsored by U.S. Environmental Protection Agency and Center for Cave and Karst Studies, Bowling Green, Kentucky, February, 1993.
- "Groundwater Monitoring in Karst Terranes," Karst Hydrology Workshop, sponsored by U.S. Environmental Protection Agency and Center for Cave and Karst Studies, Bowling Green, Kentucky, February, 1993.
- "Karst Hydrologic Problems: Groundwater Contamination, Sinkhole Flooding and Sinkhole Collapses," Karst Hydrology Workshop, sponsored by U.S. Environmental Protection Agency and Center for Cave and Karst Studies, Bowling Green, Kentucky, February, 1993.

Christopher Groves

- Assisted in organization of and gave technical presentations at the U.S. Environmental Protection Agency Workshop on Ground Water Problems in Karst Terrains, Bowling Green, Kentucky, 1993.
- Gave technical presentations at a Workshop on Understanding Karst for Environmental and Engineering Applications, Oak Ridge, Tennessee, 1993.
- "Karst Landscapes of Kentucky and Tennessee," U.S. Environmental Protection Agency Workshop on Groundwater Problems in Karst Terrains, Bowling Green, Kentucky, 1993.

- "Groundwater Modeling in Karst Aquifers: A Review." Workshop on Understanding Karst for Environmental and Engineering Applications, Oak Ridge, Tennessee, 1993.

- "Limestone Dissolution Processes," Workshop on Understanding Karst for Environmental and Engineering Applications, Oak Ridge, Tennessee, 1993.

Wayne L. Hoffman

- "The Mammoth Cave Bio-Sphere," (with others), Man and the Bio-Sphere Workshop, Estes Park, Colorado, November, 1993

Conrad Moore

- "Ways to Incorporate Writing into Your Discipline," presented for Center for Teaching and Learning and the Office of Graduate Studies.

- McCoy Hollow Field Trip for Kentucky Nature Conservancy, May 1993.

UNIVERSITY SEMINAR PRESENTATIONS

- Nick Crawford -"Environmental Problems Related to Development in Karst Terrane," sponsored by Geology and Geography Department, Middle Tennessee State University, Murfreesboro, Tennessee, November, 1993
- Glen Conner -"Mean Maximum Precipitation over Consecutive Days," presented at the Global Climatology Laboratory, National Climatic Data Center, Asheville, North Carolina, June, 1993.
 -"Wind Energy in Kentucky," with Richard Snow presented at the Kentucky Division of Energy, Frankfort, Kentucky, June, 1993.
- Wayne Hoffman -Graduate Student Honors Colloquia, Western Kentucky University, Bowling Green, Kentucky, April, 1993
- David Keeling -"Problem Regions in a Changing Europe: Portugal and Slovakia," Weekly Seminar Series, Dept. of Geography, University of Oregon, Eugene, Oregon, February, 1993.
 -"World Cities in a World System: The Two Faces of Buenos Aires, Argentina," Seminar Series, Department of Geography, Portland State University, Portland, Oregon, February, 1993.
 -"A Framework for Analyzing Buenos Aires in the World City System," La Universidad del Salvador, Buenos Aires, Argentina, April, 1993.
 -"Australia: A Wander Down Under," International Forum, Western Kentucky University, Bowling Green, October, 1993.
- Mark Lowry -"Ecuador's Colorado Indians: A Culture in Transition," Part I, Western Kentucky University Anthropology Club, Bowling Green, Kentucky, February 8, 1993.
 -"Ecuador's Colorado Indians: A Culture in Transition," Part II, Western Kentucky University Anthropology Club, Bowling Green, Kentucky, February, 1993.
- Elizabeth McClellan -"Tectonic Evolution of the Trondheim Nappe Complex, Central Norwegian Caledonides," University of Wisconsin, Parkside, Wisconsin, April, 1993.
 -"Tectonic Evolution of the Einumfizellet-Savalen Area, Hedwmarkk Fylke, Central Southern Norwegian Caledonides," University of Tennessee, Knoxville, Tennessee, August, 1993.

POSITIONS HELD IN PROFESSIONAL ORGANIZATIONS

James Bingham	-Chair, Geography Section, Kentucky Academy of Science
Glen Conner	-President, Sigma Xi, WKU Club
James Davis	-Member, Resolutions Committee, Southeastern Division of the Association of American Geographers -Chair, WKU Sigma Xi Club Nominating Committee -Chair, WKU Phi Kappa Phi Honor Society Nominating Committee
Noland Fields	-Campus Liaison Officer, Geological Society of America
Stuart Foster	-Chair, Geography Section, Kentucky Academy of Science -Secretary, Geography Section, Kentucky Academy of Science
Christopher Groves	-Chairman, Research Advisory Committee, National Speleological Society
Wayne L. Hoffman	-Chair, Small Town Data Session: The 1990 Census, South Central Regional APA Conference, October, 1993. -Kentucky Representative, Organizing Committee, South Central Regional APA Conference, October, 1993. -Secretary, Geography Section, Kentucky Academy of Science.
Deborah Kuehn	-Promotion Chair, Sigma Xi Research Conference -Chair, Geology Section, Kentucky Academy of Science -Secretary, Geology Section, Kentucky Academy of Science, -Membership Committee, Sigma Xi, WKU Club
Kenneth Kuehn	-Board of Directors, WKU Center for Coal Science -Secretary/Treasurer, The Society for Organic Petrology, 1993-95 (international) -Secretary, Geology Section, Kentucky Academy of Science (1993-94) -Sigma Xi, Open House for Research, Planning Committee
Mark Lowry	-Member, Advisory Board, Midwestern Association of Latin American Studies, 1993-1996.

SERVICE ON OFF-CAMPUS ADVISORY COMMITTEES

- Glen Conner
- Water Availability Advisory Council, Kentucky Natural Resources Cabinet's Division of Water.
 - Alternate Energy Project Review Committee, Kentucky Department of Energy.
 - Committee on Research and Policy, Kentucky Water Resources Research Institute, University of Kentucky.
- Nick Crawford
- Friends of the Lost River, Board of Directors,
 - Mammoth Cave National Park Association, Board of Directors,
 - Science Committee, Cave Research Foundation
 - Planning Committee, Karst Waters Institute
- Noland Fields
- NCATE, Member campus host committee for College of Education accreditation review State Commission
 - Member, Governor's Earthquake Hazards Advisory Panel
- Stuart Foster
- Bowling Green Warren County Chamber of Commerce, Health Committee, Chair, Community Resource Guide Subcommittee
- Christopher Groves
- Member, Science Committee, Cave Research Foundation
 - Member, Advisory Board, Karst Waters Institute
 - Member, Board of Directors, Central Kentucky Karst Coalition
 - Member, Board of Directors, Friends of Lost River
- Wayne L. Hoffman
- Affordable Housing Task Force-City of Bowling Green
 - BRADD Board of Directors
 - Chair, Natural Resources Committee, BRADD
 - Citizen Member, Ohio River Basin Committee
 - Board of Directors, Mammoth Cave National Park Association
 - Board of Directors, Western Kentucky Development Corporation
 - Executive Committee, WKD Corporation
 - Tourism Committee, WKD Corporation
 - Mammoth Cave Biosphere Advisory Committee
 - Council on Higher Education GIS Committee

Mark Lowry

- Kentucky Committee on U.S-Arab Relations
- Sister Cities Organization
- Partners of the Americas

Albert Petersen

- Kentucky Historic Preservation Review Board
- Co-coordinator of the Kentucky Geographic Alliance, sponsored by the National Geographic Society

PROFESSIONAL PUBLIC SERVICE

- Reza Ahsan
- External Examiner for Ph.D. Dissertations, Andhrou University, India.
 - Judge, Kentucky Junior Academy of Science competiton
 - Provide consulting for Remote Sensing and Satellite Imagery, Cartography and Mapping, Digital Techniques
- James Bingham
- Chair, Kentucky Academy of Science, Geography Section, Georgetown, October 1993
- Glen Conner
- State Climatologist for Kentucky
 - Fulfilled over 900 requests for climatological data and information.
 - Received data from National Climatic Data Center worth \$500
 - Received data and services from the National Weather Service's Climate Analysis Center worth \$726
 - Received data and services from the Midwest Climate Center worth \$450
- Nicholas Crawford
- Assisted Soil Conservation Service with a video on nonpoint source contaminants associated with agricultural practices at Mammoth Cave National Park and Everglades National Park
 - Assisted U.S. EPA with site investigation of The Keith Pond Toxic Waste Site in Bowling Green
 - Assisted several homeowners with site investigations of sinkhole collapse, drainage problems and radon problems
 - Assisted Commonwealth Technology with information on groundwater flow and sinkhole problems along the proposed route for the new Cemetery Road and I-65 interchange in Bowling Green
 - Various Lost River projects
 - Assisted Law Engineering with information on sinkhole collapses
 - Assisted Soil Conservation Service and Warren County Conservation District with grant proposal for an investigation of nonpoint source pollution in the Harris Spring Groundwater Basin\
 - Assisted homeowner with site investigations and plans for radon mitigation system
 - Inspected sinkhole collapse under home near Portland, Tennessee, read engineering reports, made recommendations

- Inspected landfill near Murfreesboro, Tennessee, read engineering reports, recommended groundwater monitoring techniques
 - Assisted local developer with drainage problem, performed microgravity traverse and dye traces - Field Methods class project
 - Investigated sinkhole collapse under a two-story building in Bowling Green. Prepared a report "Sinkhole Collapse Under Super 8 Motel, Bowling Green, Kentucky," May 6, 1993, 56 p.
 - Assisted the City of Auburn, Kentucky in finding an additional water supply and prepared report
 - Assisted numerous consulting firms, government agencies and individuals with information on karst, caves, sinkholes, groundwater problems, sinkhole collapse and sinkhole flooding problems, and radon problems.
 - Several Media Interviews.
- Noland Fields
- Interview for Outlook, WKYU TV program on Earthquakes
- Stuart Foster
- Ongoing project to develop a health care resources geographic information system to serve Warren County in conjunction with South Central Kentucky Area Health Education Center and the Graves-Gilbert Clinic
- Christopher Groves
- Reviewer for National Science Foundation.
 - Reviewer for Groundwater, Journal of Hydrology, and Water Resources Research
 - Gratis consulting to both home owners and builders concerning sinkhole flooding and sinkhole collapse, Bowling Green, Kentucky
 - Gratis consulting to U.S. Environmental Protection Agency Robert Kerr Laboratory, Ada, Oklahoma, concerning groundwater modeling strategies for karst terrains
 - Wrote (and had accepted) questions for the ACT Science Reasoning Test, (college entrance exam), American College Testing Service
 - Grant proposal reviewer for National Speleological Society, Cave Research Foundation, and National Park Service
- Wayne L. Hoffman
- Presentation to Leadership Group, Franklin/Simpson County, August, 1993
 - Media Interviews and Materials
- David Keeling
- "Geography's Role in the New World Order: Implications for New Zealand," presented to Rotary Club of New Zealand, Whangarei, New Zealand, January, 1993.

- Session Chair, Association of American Geographers, Annual Meeting, Atlanta, April, 1993
 - Science Days
 - Interview by Todd Dykes on WWHR 91.7, October, 1993 on the importance of an international curriculum for students at Western
- Deborah Kuehn
- Reviewed Laboratory Text and Manual
 - Reviewed National Science Foundation Proposal
 - Reviewed Article for Journal of Coal Quality
- Kenneth Kuehn
- Odyssey Exploration, Inc., Bowling Green, KY, approximately 40 hours on oil and gas exploration (various dates)
 - Korte Oil Co., Inc., Somerset, KY, approximately 15 hours on oil and gas exploration (various dates)
 - John Niland, Attorney, Munfordville, KY, sand and gravel problem, 2 hours, March 2
- Elizabeth McClellan
- Judge, Kentucky Academy of Science Student Paper Section
- Albert Petersen
- Consultant to the Office of the Attorney General Commonwealth of Kentucky, Ohio River Boundary Supreme Court No. 106
 - Historic Preservation Survey, Smiths Grove, Kentucky
- Mary Prante
- Judge, Kentucky Junior Academy of Science
- L. Michael Trapasso
- Faculty Advisor, WKU Native American Network
 - Tour of College Heights Weather Station, Visiting Chinese Delegation
 - Presentation on the Sultanate of Oman, WKU International Forum
 - Precipitation Forecast and Estimates, Kentucky Division of Water
 - Wind Data for Insurance Claims, Microfish Corporation
 - Report on Severe Weather Episode, English, Lucas, Priest and Owlsey
 - Testified in a Court Case (Temperature Data), Bowling Green Justice Court
 - Wind Data Report, Kentucky Department of Agriculture Division of Pesticide
 - Reviewed Teacher's Guide to Kentucky's Environment, Kentucky State Environmental Quality Commission
 - Tour of College Heights Weather Station, Bowling Green Ham Radio Club
 - Wind Data for Storm Damage Report, Bowling Green Municipal Utilities
 - Calibrated a Hygrothermograph, Fruit of the Loom Corporation

- Precipitation Data for Insurance, McCloud Claim Service
- Hygrothermograph Chart Data, Lexington Textiles Company
- Precipitation Data Report, Kentucky EPA Division of Water
- Precipitation Report for a Court Case, Mr. & Mrs. Robert Hill, Bowling Green

Media Interviews:

- Middle East Issues and Perspectives, WKYU-FM
- Middle East Issues and Perspectives, WBKO-TV
- Middle East Experiences, Park City Daily News
- Middle East Experiences, Niagara Falls Gazette
- Storm Damages in the region, Edmonson County News
- Lightning Accidents, Louisville Courier Journal
- Rainfall Forecast and Outlook, Park City Daily News
- Hurricane Emily, WBKO-TV

UNIVERSITY AND COLLEGE COMMITTEE ASSIGNMENTS

Reza Ahsan	<ul style="list-style-type: none"> -Member, University Latin American Studies Committee -Member, University Asian Studies Committee -Departmental Member of Faculty Senate
James Bingham	<ul style="list-style-type: none"> -Departmental Member of Faculty Senate
Nick Crawford	<ul style="list-style-type: none"> -Ogden Research Scholarship Committee
Glen Conner	<ul style="list-style-type: none"> -Math, Science, and Environmental Steering Committee, 1992-1993 -Departmental SACS Review Committee -Likes-Garrison Scholarship Committee -Ogden College Dean Search Committee, Fall 1993
James Davis	<ul style="list-style-type: none"> -Chair, Western's Graduate Programs Evaluation Committee, SACS Process -Yeager Scholarship Committee
Noland Fields	<ul style="list-style-type: none"> -WKU-Science and Mathematics Task Force For Teacher Education -OCSTH/CEBS Center for Math, Science, and Environmental Education Steering Committee -OSCTH OAR Undecided Student Advisory Committee
Chris Groves	<ul style="list-style-type: none"> -University Probation Committee
Wayne L. Hoffman	<ul style="list-style-type: none"> -OCSTH Deans Search Committee -OCSTH College Curriculum Committee -University Unnecessary Paper Taskforce
David Keeling	<ul style="list-style-type: none"> -Latin American Studies Committee, Member -Participant in the organization of a public lecture series to be held at Bowling Green Public Library, spring 1994 sponsored by Latin American Studies -University Academic Probation Committee
Deborah Kuehn	<ul style="list-style-type: none"> -Academic Council -Rules Committee -Center for Coal Science Member -Ogden College Curriculum Committee
Kenneth Kuehn	<ul style="list-style-type: none"> -Academic Council (1992-94) -Patent Committee, Chair -Special Committee to Study Salaries and Wages at WKU -Sigma Xi - Open House for Research, Planning Committee

Mark Lowry

- WKU Faculty Grievance Committee
- WKU Advisory Committee on Faculty Continuance
- WKU Academic Council Member, 1993-1994.
- WKU Latin American Studies Committee
- OCSTH Graduate Committee
- Department Advisor to LASPAU Graduate Students

Conrad Moore

- United Way Committee
- Canadian Studies Central Committee
- Environmental Studies Committee - Chair, Spring Semester

Albert Petersen

- WKU Museum Committee

MASTERS DEGREES AWARDED - 1993**Master of Science in Geography**

- Scott Slunder - Dr. Christopher Groves, Advisor
Thesis Title: "Field Test of a Calcite Disolution Rate;
Forts Funnel Caves, Mammoth Cave National Park."
- Ellen Isenburg Bunch - Dr. Conrad Moore, Advisor
- Koichi Ino - Dr. James L. Davis, Advisor

Master of Science in City and Regional Planning

- Curtis Barman - Dr. Mark Lowry, Advisor
- Julie Domian - Dr. Albert Petersen, Advisor
- Melanie Neuber - Dr. Stuart Foster, Advisor
- Steve Owens - Dr. Stuart Foster, Advisor
- Walter Patrick - Dr. Stuart Foster, Advisor
- Deborah Scott - Dr. Wayne Hoffman, Advisor

DEPARTMENT GRADUATES 1993

Geography Majors

Tony Allison
 Kyle Bearden
 Wade Carroll
 Sandra Cash
 Deena Clark
 Brian Crump
 James Crenshaw
 James Damron
 Daniel Davis
 Shawn Dye
 Andrew Gawarecki
 Jesse Lewis
 Ronald Lindsey, Jr.
 Narges Nazem
 Rodney Norris
 Elissa Rees
 Jason Rutledge
 John Sensing
 John Stark
 Chris Tedesco
 James Tuck Tinsley
 Steven Tucker
 Shari Vaughan
 Doug Wilhite
 Ross Workman

Geography Minors

Terry Blackburn
 Robert Hatcher
 Kevin Ingram
 Scott Meckes
 Alice Richardson
 Rebecca Smith
 Kenneth Vanstone
 Kelly Whitcomb
 Bradley McKay
 Milton Syra
 Joseph Carwile

Harvey Clark, Jr.
 Michael Conner
 William Daniel
 Cynthia Dutton
 Lane Fowler
 Sean Laflin
 Glen Siegel
 Bethany Watt

City and Regional Planning Minor

Deena Clark
 Narges Nazem
 Shari Vaughan

Lisa Thompson
 James Tuck Tinsley
 Jeffrey Guy

Geology Majors

Sandra Cash
 Harvey Clark, Jr.
 Michael Conner
 Lane Fowler
 Clay Kirby
 Christopher Kozloski
 Charles Leachman II
 Aaron Magan
 Rick Saylor
 Michael Sykes
 Kenneth Vanstone

Geology Minors

Kyle Bearden
 Daniel Davis
 Shawn Dye
 John Stark
 Chris Tedesco

Meteorological Technology

John Sensing

Earth Science Major

Rebecca Smith

Earth Science Minor

James Damron
 Rick Saylor

Cartographic Mapping Tech

Abdullah Ali Al-Ghamdi

**PROGRAM GRADUATES
1991-1993**

The number of program graduates in individual programs has become an increasingly important factor in program review. Please find below the number of undergraduate student graduating from our respective program between 1991 and 1993. The reader is advised that the listing of students graduating by name found on the preceding page is not directly comparable to the cited data -- they cover different time periods.

PROGRAM	1991	1992	1993
Earth Science Major	0	3	1
Geography Major	12	28	27
Geology Major	5	6	5
City & Regional Planning Minor	1	6	4
Earth Science Minor	1	2	2
Geography Minor	8	13	14
Geology Minor	4	2	3
Cartographic & Mapping Tech. Assoc.	0	0	1
Meteorological Tech. Assoc.	1	2	1
Total	32	62	58

GRADUATE STUDENTS IN RESIDENCE - 1993

Dorothy Alford, Western Kentucky University
Mike Anderla, Northeast Missouri State
Curtis Barman, Western Kentucky University
Kyle Bearden, Western Kentucky University
Myra Brandon, Western Kentucky University
Jim Breslin, University of Louisville
Chris Brown, Western Kentucky University
Kristi Baxley Brown, Western Kentucky University
Ellen Isenberg Bunch, Western Kentucky University
Celia Campbell, Western Kentucky University
Steve Capps, Tennessee Tech
Sandi Cash, Western Kentucky University
Michael Dant, Western Kentucky University
Robin Diederich, University of Louisville
Sean Dollman, Western Kentucky University
Julie Domian, University of Louisville
Trisha Embry, Western Kentucky University
Michael Horsley, Western Kentucky University
Koichi Ino, Kyushio University
Kiersten Jaggars, Western Kentucky University
Paul Kimble, University of Louisville
Ronald Lee, Western Kentucky University
James Leonard, Norwich University
Robert Luckabuagh, Clemson University
Kenneth McDonald, US Military Academy
Allen McKee, Western Kentucky University
Joe Meyer, Western Kentucky University
Cathy Morris, Western Kentucky University
William T. Neisz, Western Kentucky University
Jay Nelson, University of Kentucky
Melanie Neuber, Western Kentucky University
Steven H. Owens, Western Kentucky University
Walter Patrick, University of Kentucky
Tom Polanski, University of Colorado
Jean Rowzee, Memphis State University
Debbie Scott, Western Kentucky University
Tim Slattery, Western Kentucky University
Scott Slunder, University of Evansville
Tom Springer, Western Kentucky University
Bill Steinmetz, Western Kentucky University
Joseph Tinsley, Western Kentucky University
Mark Turner, University of Cincinnati
Kendra Vanhooser, Western Kentucky University
Patty Villalobos, Western Kentucky University
Craig Webb, University of Kentucky
Jonathan Wood, University of Tennessee

UNDERGRADUATE ENROLLMENT DATA

Program Enrollment

There was an increase of 23 students in program enrollments when comparing Fall 1992 to Fall 1993 data (Table 3). This is a 9.3% increase. The Fall 1993 data reflect the continuing resurgence of enrollment that was predicted in the 1990 Annual Report. The Geology major program continues to increase from 50 majors in 1992 to 60 in 1993. Both the undergraduate geology and geography programs are the largest in the Commonwealth. After a long period of stability, this growth is noteworthy. A growing awareness of the environment and an improved job market for both geographers and geologists has generated this increase. In addition, some credit can be given our improved computer facilities in attracting new majors and minors. In later years, we project an increase of program enrollees --a total of 260 or more. It was gratifying to attain our objective. A graphic view of Department, Geography, and Geology program enrollments from 1984 to 1993 are found on Figures 1, 2, and 3.

TABLE 3
HISTORICAL PERSPECTIVE
1990 - 1993

	Spr '90	Fall '90	Spr '91	Fall '91	Spr '92	Fall '92	Spr '93	Fall '93
Earth Science Major	9	7	7	7	6	5	7	5
Geography - Major	74	83	92	94	81	92	101	89
Geology - Major	35	27	24	37	40	50	54	60
Earth Science - Minor	2	2	3	4	6	5	4	3
Geography - Minor	47	37	35	47	50	48	58	61
Geology - Minor	15	8	10	15	17	17	16	22
City & Regional Planning Minor	12	11	10	11	9	8	8	11
Cartography & Mapping Tech. Associate Degree	8	7	6	11	12	12	11	8
Meteorological Technology -- Associate Degree	21	10	8	13	11	10	10	11
TOTAL	223	192	195	239	232	247	269	270

GEOGRAPHY AND GEOLOGY UNDERGRADUATE PROGRAM ENROLLMENT FALL 1984 - FALL 1993

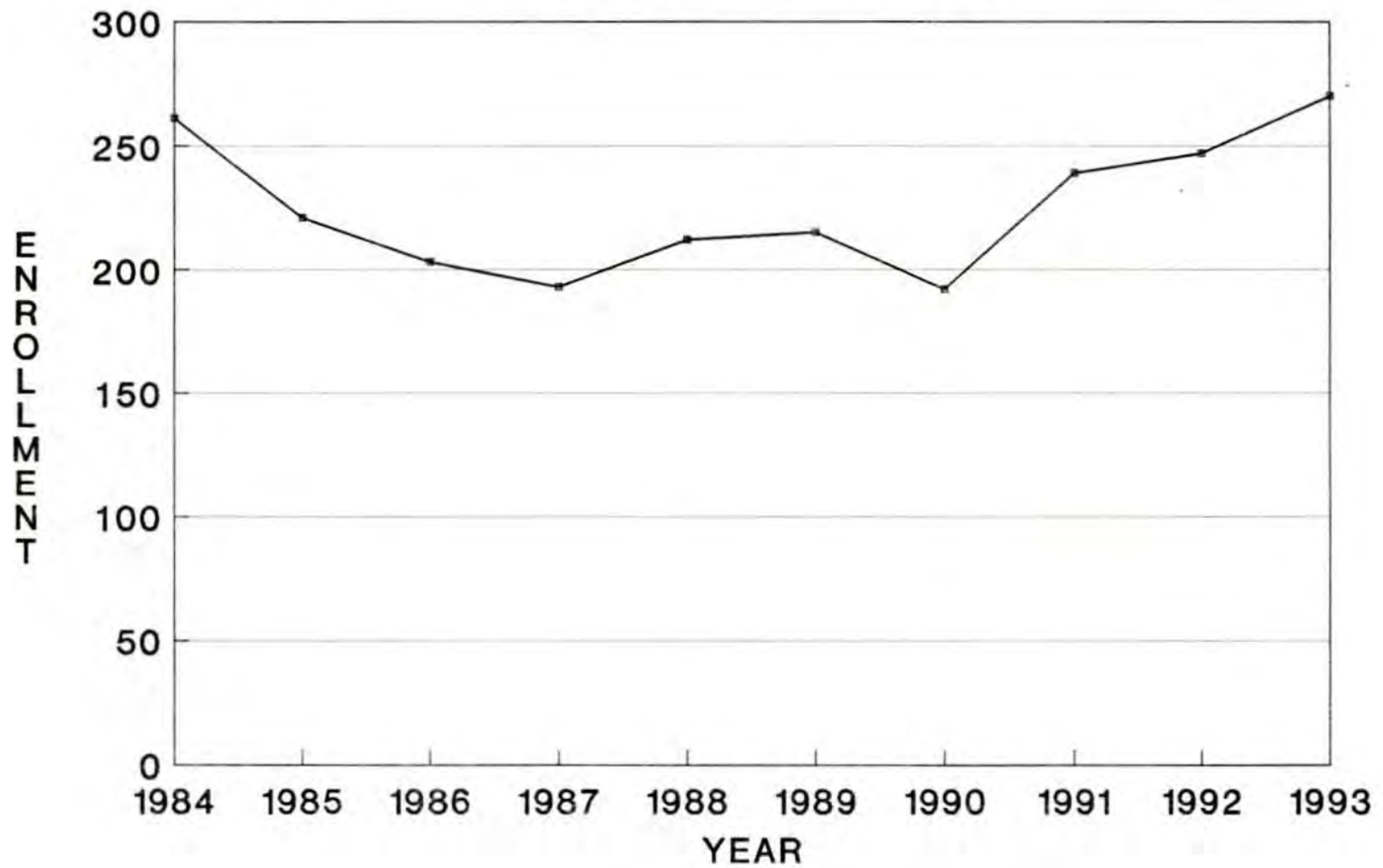


Figure 1

GEOGRAPHY ENROLLMENT

FALL 1984 - FALL 1993

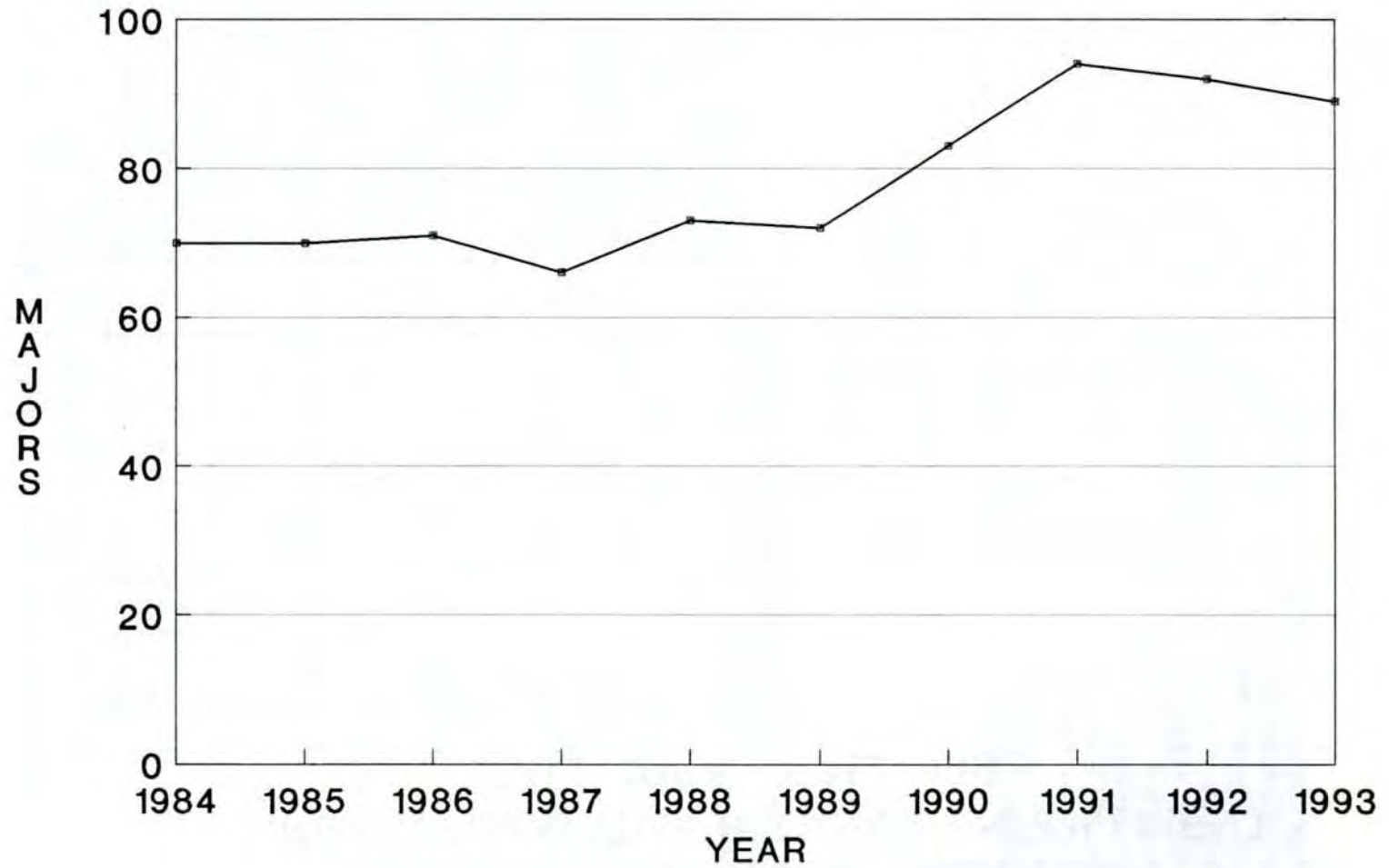


Figure 2

GEOLOGY ENROLLMENT

FALL 1984 - FALL 1993

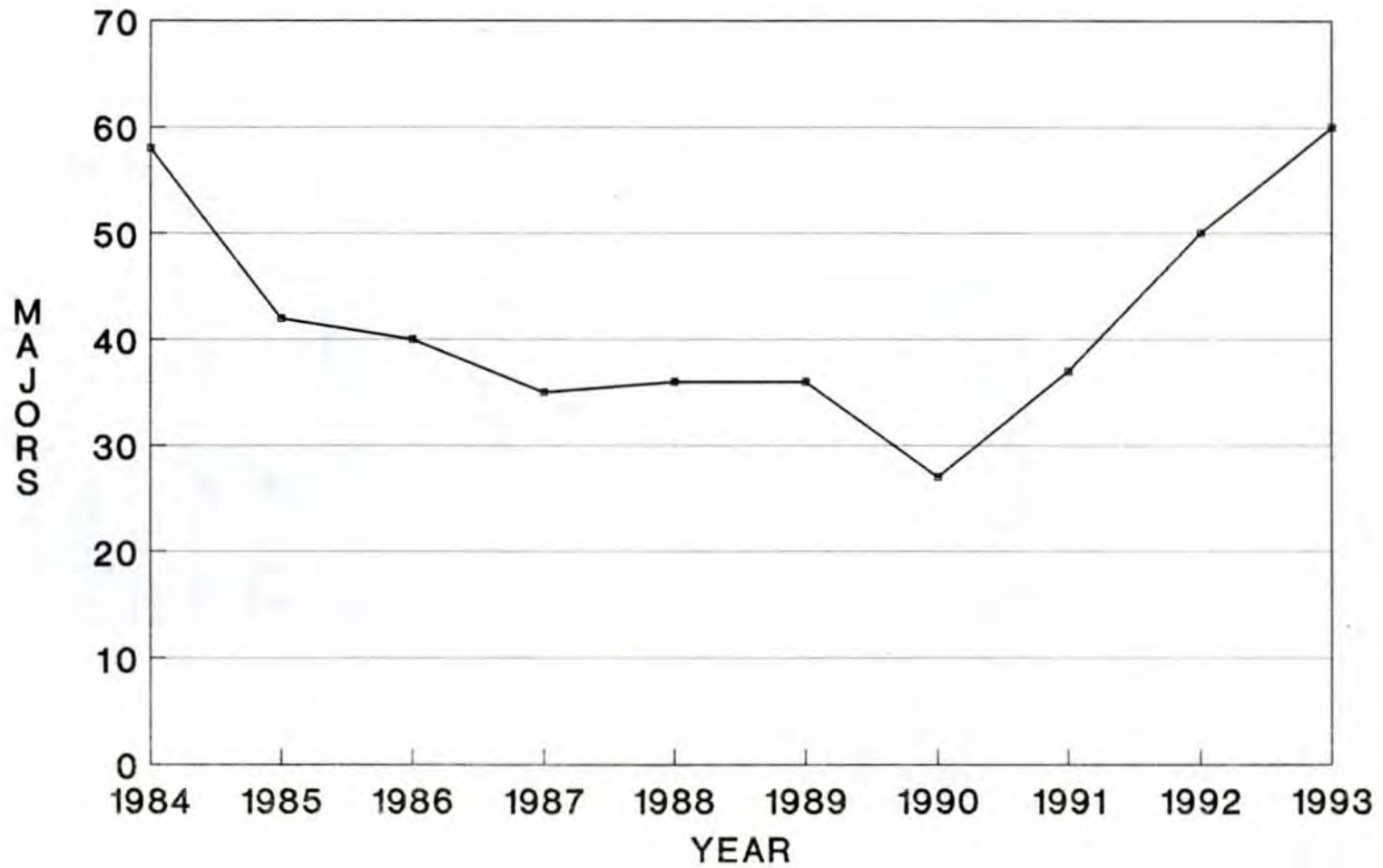


Figure 3

Student Credit Hours

Over 6,000 student credit hours were generated for both Spring and Fall Semesters of 1993 (Table 4). This maintains our high level of enrollment since the Fall 1988 Semester.

TABLE 4
HISTORICAL PERSPECTIVE STUDENT CREDIT HOURS
1990 - 1993

	Spr '90	Fall '90	Spr '91	Fall '91	Spr '92	Fall '92	Spr '93	Fall '93
Geography	4,694	5,038	4,758	5,036	5,054	5,422	4,990	5,268
Geology	1,523	1,499	1,507	1,532	1,330	1,494	1,528	1,314
Total	6,217	6,537	6,265	6,568	6,384	6,916	6,518	6,582

Upper division student credit hours increased significantly in the geography and geology area in the past year (Table 5).

TABLE 5
UPPER DIVISION STUDENT CREDIT HOURS
1989 - 1993

	Geography	Geology
Fall - 1989	723	174
Fall - 1990	825	144
Fall - 1991	877	214
Fall - 1992	844	248
Fall - 1993	1,065	290

Student Faculty Ratio

Reflecting the large increase in student credit hours and the significant service role the department plays in the University's educational delivery system, the Department's student/faculty ratio for Fall 1993 was 26.0. Table 6 details the department's student/faculty ratio between 1989-1993.

TABLE 6
STUDENT/FACULTY RATIO
FALL SEMESTER 1989 - 1993

	1989	1990	1991	1992	1993
Geography and Geology	26.7	28.8	26.8	26.7	26.0
Ogden College	19.2	19.7	19.2	19.8	18.9
WKU	19.3	19.5	19.6	19.5	19.2

Program Modification and Course Developments

During the past year curriculum efforts and program developments were largely replaced by efforts to justify and retain programs currently offered by our respective disciplines. In the summer of 1993, Governor Jones convened a panel titled The Higher Education Review Commission. Consisting of legislators, government officials, university presidents, and Board of Regents members the committees charge was to review funding of Higher Education, proliferation of programs, and "unnecessary duplication of offerings and programs." Programs with a small number of graduates were particularly placed under scrutiny. In the review process, the University identified numerous programs to be terminated. They included the undergraduate Earth Science Major and the Master of Science Degree in City and Regional Science. Only time will reveal the wisdom of this action. On a brighter note, both Geography and Geology were affirmed as members of the core disciplines by the Council on Higher Education.

In addition to the termination of the cited programs, other curriculum or program modifications that were initiated during the year included:

- The establishment of new emphasis in geography entitled the Geomorphology/Hydrology Track
- Created a new course, Geography 427 and 427G, Water Resources, 3 hours

- Created a new course, Geography 428 and 428G, Applied Groundwater Hydrology, 4 hours
- Created a new course Geography 429 and 429G, Broadcast Meteorology, 3 hours. Cross-listed with Communication and Broadcasting

Mammoth Cave Summer Program

The Summer University at Mammoth Cave conducted three courses and workshops. The 1993 courses and instructors were:

Karst Geology	- Dr. Arthur Palmer
Karst Hydrology	- Dr. William White & Dr. Nick Crawford
Speleology	- Mr. Roger Brucker

Sections and Course Enrollment Listings

Sixty-two sections (not including the graduate component in 400 level courses) were offered in the Geography area during the spring 1993 semester. Student enrollment totaled 1,821. Twenty-two sections (not including the graduate component in 400 level courses) were offered in Geology, with an enrollment of 585. Sixty-three sections were offered in Geography during the fall 1993 semester, with a student enrollment of 1,824. Geology offered 21 sections with a student enrollment of 480 for this period.

Ten geography sections were offered in the first session of the summer term. They generated 106 enrollments. Five sections in Geology generated 42 enrollments. The five second term sections in geography produced 64 students, and the 3 sections in geology produced 43 students.

In the previously mentioned section listings are several evening and extended campus offerings. They include:

	<u>Evening</u>	<u>Extended Campus</u>
Spring 1993	Geog 110 Geog 434(G) Geog 487(G) Geog 493(G) Geog 500	Geog 100 - Glasgow Geog 110 - Glasgow Geog 350 - Elizabethtown Geol 102 - Brownsville Geol 102 - Morgantown
Summer 1993		Geog 360 - Glasgow Geog 451(G) - Glasgow Geol 102 - Glasgow

Fall 1993	Geog 423(G) Geog 452 Geog 467(G) Geog 484(G) Geog 500 Geog 502	Geog 100 - Glasgow Geog 101 - Glasgow Geog 350 - Glasgow Geog 471 - Elizabethtown
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Nineteen sections of Geography and Geology courses were offered in the Community College in 1993. They were:

Spring 1993

Geog 100	2 sections
Geog 101	2 sections
Geog 110	1 section---crosslisted
Geog 121	2 sections

Summer 1993

Geog 100	1 section----crosslisted
Geog 101	2 sections----crosslisted
Geol 102	2 sections---crosslisted

Fall 1993

Geog 100	3 sections
Geog 101	3 sections---crosslisted
Geog 110	1 section----crosslisted

Detailed section listings for the spring 1993 semester, 1993 summer session, and 1993 fall semester follows:

GEOGRAPHY ENROLLMENT - SPRING 1993

		<u>Sections</u>	<u>Total Students</u>
Geog 100	Intro. Man's Physical Env	12	646
Geog 101	Prin. Human Geography	9	280
Geog 110	World Regional	5	179
Geog 121	Meteorology	7	280
Geog 200	Intro. Latin America	1	8
Geog 240	Introduction to Planning	1	14
Geog 300	Scope & Methods	1	22
Geog 315	Cartography	1	16
Geog 350	Economic Geography	1	34
Geog 360	Geography of North America	2	70
Geog 404	Computer Mapping	1	21
Geog 416(G)	Remote Sensing	1	10
Geog 421(G)	Advanced Geomorphology	1	20
Geog 426	Meteorology/Climatology	1	15
Geog 451(G)	Geography of Kentucky	1	36
Geog 434(G)	Historic Preservation Planning	1	15
Geog 471	Conservation	1	35
Geog 474(G)	Environmental Planning	1	33
Geog 475(I)	Selected Topics Geography	1	7
Geog 484	Planning Theory & Application	1	5
Geog 486	Environmental Seminar	1	3
Geog 487 (G)	Environmental Law	1	16
Geog 491(G)	Data Analysis	1	9
Geog 500	Intro. Research	1	17
Geog 504	History and Philosophy of Geography	1	10
Geog 510	Selected Topics Geography	1	2
Geog 571	Quality of Life	1	7
Geog 584	Planning Theory & Applications	1	4
Geog 595(I)	Planning Practicum	1	3
Geog 599	Thesis	2	3
Geog 600	Maintaining Matriculation	1	1
	Total	62	1,821

GEOLOGY ENROLLMENT - SPRING 1993

		<u>Sections</u>	<u>Total Students</u>
Geol 102	Intro Geology	8	335
Geol 111	Physical Geology	1	36
Geol 112	Historical Geology	1	43
Geol 113	Physical Geology Lab	2	41
Geol 114	Historical Lab	2	40
Geol 308	Structural Geology	1	23
Geol 350	Petrology	1	6
Geol 440	Hydrogeology	1	18
Geol 460	Sedimentology	1	5
Geol 475	Selected Topics Geology	3	6
Geol 486	Environmental Seminar	1	2
	Total	22	555

GEOGRAPHY ENROLLMENT - SUMMER 1993

		<u>Sections</u>	<u>Total Students</u>
First Term			
Geog 100	Intro Physical Environment	1	49
Geog 101	Prin Human Geography	1	19
Geog 360	Geography of North America	1	11
Geog 475	Independent Study	1	1
Geog 491 (G)	Data Analysis	1	11
Geog 495	Planning Internship	1	1
Geog 510	Independent Study	1	8
Geog 524	Meteorology for Teachers	1	1
Geog 595	Planning Practicum	1	4
Geog 599	Thesis	1	1
	Total	10	106
Second Term			
Geog 101	Prin Human Geography	1	17
Geog 360	Geog of North America	1	12
Geog 451 (G)	Geog of Kentucky	1	33
Geog 475	Independent Study	1	1
Geog 510	Independent Study	1	1
	Total	5	64

GEOLOGY ENROLLMENT - SUMMER 1993

		<u>Sections</u>	<u>Total Students</u>
First Term			
Geol 102	Introduction to Geology	1	24
Geol 475 (G)	Independent Topics	3	16
Geol 511	Dynamic Earth	1	2
	Total	5	42
Second Term			
Geol 102	Introduction to Geology	2	40
Geol 475(G)	Independent Topics	1	3
	Total	3	43

GEOGRAPHY ENROLLMENT - FALL 1993

		<u>Sections</u>	<u>Total Students</u>
Geog 100	Intro Physical Environ	11	652
Geog 101	Prin Human Geography	12	339
Geog 110	World Regional	4	204
Geog 121	Meteorology	4	187
Geog 122	Aviation Meteorology	1	8
Geog 200	Intro. Latin America	1	12
Geog 240	Introduction to Planning	1	2
Geog 280	Introduction to Environmental Science	1	34
Geog 300	Scope and Methods	1	21
Geog 310	Hydrology	1	18
Geog 315	Cartography	2	29
Geog 328	Climate, Soils and Vegetation	1	31
Geog 350	Economic Geography	2	47
Geog 360	Geography of North America	3	79
Geog 415 (G)	Air Photo	1	17
Geog 420 (G)	Geomorphology	1	11
Geog 422(G)	Climatology	1	15
Geog 423(G)	Transportation Planning	1	20
Geog 451	Geography of Kentucky	1	22
Geog 452	Field Studies	1	6
Geog 467(G)	Geography of the Middle East	1	11
Geog 471	Conservation	1	25
Geog 475(I)	Selected Topics Geography	3	7
Geog 491(G)	Data Analysis	1	14
Geog 500	Geographic Research	1	7
Geog 502	Field Work	1	15
Geog 505	Biogeography	1	6
Geog 510	Selected Topics Geography	3	14
Geog 599	Thesis	1	2
Geog 600	Maintaining Matriculation	1	1
	Total	63	1,824

GEOLOGY ENROLLMENT - FALL 1993

		<u>Sections</u>	<u>Total Students</u>
Geol 102	Intro. Geology	5	248
Geol 111	Physical Geology	1	37
Geol 112	Historical Geology	1	25
Geol 113	Physical Geology Lab	3	60
Geol 114	Historical Lab	1	23
Geol 295	Intro. to Research Methods	1	1
Geol 310	Hydrology	1	17
Geol 330	Mineralogy	2	17
Geol 370	Stratigraphy	1	14
Geol 380	Field Work	1	2
Geol 399	Res Prob Geol	1	2
Geol 405	Paleontology	1	12
Geol 415(G)	Environmental Geology	1	21
Geol 420	Geomorphology	1	1
	Total	21	480

STUDENT CO-OP/INTERN PROGRAM - 1993

Name of Student	Major	Employer	(City, State) Location	Salary
Curtis Barman	City & Regional Planning	Galloway Appraisal	Louisville, KY	yes
Michael Dant	City & Regional Planning	Center for Local Gov't - WKU	Bowling Green, KY	yes
Steven Owens	City & Regional Planning	BRADD	Bowling Green, KY	yes
Julie Domian	City & Regional Planning	Lincoln Trail ADD	Elizabethtown, KY	yes
Melanie Neuber	City & Regional Planning	Center for Local Gov't - WKU	Bowling Green, KY	yes
Walter Patrick	City & Regional Planning	City Planning Office	Bowling Green, KY	yes
Deborah Scott	City & Regional Planning	Corbin City Planning	Corbin, KY	yes
Katherine Shepard	Geography	Campbellsville City Planning	Campbellsville, KY	yes

STUDENT AWARD WINNERS - 1994

OUTSTANDING SENIOR

- Geography** - Richard Snow and Mary Snow
- Geology** - Margaret Chai

OUTSTANDING GRADUATE STUDENT

- Geography** - Ellen Isenberg Bunch
- City & Regional Planning** - B. Patricia Villalobos

PUBLICATIONS AND PROFESSIONAL REPORTS BY STUDENTS

- Campbell, Celia and Conrad Moore, "Regional Wind Patterns in the Contiguous United States," Proceedings Geography Section, Kentucky Academy of Science, November, 1993, pp. 22-31.
- Dant, Michael, "History and Historical Resources," Comprehensive Plan Update, 1992, Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 10-31.
- Dant, Michael, "Transportation Analysis," Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 154-211.
- Dant, Michael, "Transportation Element," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp. 200-266.
- Dant, Michael, and Douglas Stevenson, "History and Historical Resources," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 9-22.
- Embry, Trisha and Douglas Stevenson, "Physical Resources," Comprehensive Plan Update, 1992, Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 32-60.
- Embry, Trisha, "Physical Resources," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp. 35-75.
- Howcroft, W. D. and Crawford, N.C., "Potential Sources of Additional Water for Auburn, Kentucky," prepared for Auburn, Kentucky, May 6, 1993, 132 p.
- James, Joe, "Transportation Element," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 132-169.
- Kelly Kaletsky and L. Michael Trapasso, "Measurement of the Effects of Food Preparation Activities on the Microclimate of Mammoth Cave, Kentucky," 89th Annual Meeting, Association of American Geographers, Abstracts, Atlanta, Georgia 6-10 April 1993, 238 p.
- Kelly Kaletsky and L. Michael Trapasso, "Tourist Activities and the Microclimate of Mammoth Cave, Kentucky," Proceedings of the XI International Congress of Speleology, Beijing, P.R. China, 2-8 August, 1993, pg. 188-191.
- Neuber, Melanie and Wayne Hoffman, "Current Population and Projection," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp. 76-110.

- Neuber, Melanie, "Current Population and Projection," Comprehensive Plan Update, 1992, Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 61-90.
- Neuber, Melanie, "Current Population and Projections," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 52-75.
- Neuber, Melanie, "Housing Element," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 170-188.
- Neuber, Melanie, "Housing Element," Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 212-231.
- Neuber, Melanie, John Stark, Trisha Embry, and Douglas Stevenson, "Community Facilities Element," Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 232-254.
- Neuber, Melanie, Trisha Embry, Patricia Villalobos, and John Stark, "Community Facilities Element," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993, pp. 307-351.
- Neuber, Melanie and James Davis, "Traffic Management: Glasgow, Kentucky," Proceedings, Geography Section, Kentucky Academy of Science, November 1993, pp. 32-41.
- Slattery T. E. and Nicholas Crawford, "Dye Trace to Determine if Groundwater from the Gray PCB Site is Flowing into Blue Lake, A Supplemental Water Supply for Hopkinsville, Kentucky," prepared for Roy F. Weston, Inc. and U.S. Environmental Protection Agency, November, 1993, 84 p.
- Stark, John, "Economic Base Analysis," Comprehensive Plan Update, 1993: Hopkins County, Center for Local Government, Western Kentucky University, 1993,.
- Stark, John, "Economic Base Analysis," Comprehensive Plan Update, 1992: Logan County, Center for Local Government, Western Kentucky University, 1993, pp. 91-119.
- Stark, John, "Economic Base Study," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 76-103.
- Stevenson, Douglas, Melanie Neuber, and John Stark, "Community Facilities Element," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 189-209.
- Stevenson, Douglas, "Physical Resources," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 23-51.

- Tweddell, Thomas and Wayne Hoffman, "Landuse Element," Comprehensive Plan Update, 1992: Simpson County, Center for Local Government, Western Kentucky University, 1993, pp. 104-131.
- D. Wilhite, N.C. Crawford, C. Anderson, R. Hillard, R. Wilhite, M. Turner, and J. Wood, "Groundwater Flow in the Vicinity of Philips Lighting Company, Danville, Boyle County, Kentucky," prepared for GEI Consultants, Inc. April 10, 1993, Volumes I, II, and III, 1993, 352 p.

STUDENT PRESENTATIONS

Alkolibi, Fahad and Michael Trapasso, "Regional Temperature Trends and Variations in the Contiguous United States," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Bearden, Kyle, James Damron, and Wayne Hoffman, "Landuse in Logan and Simpson Coungy," Fifth Biennial Open House for University Research, Western Kentucky University, April 1993.

Bearden, Kyle, "Development of a Geographic Information System for Karst Groundwater Research," Kentucky Academy of Science, Georgetown, October, 1993.

Chai, Margaret, "Some Petrologic and Chemical Characteristics of a Transgressive Peat Deposit in San Salvador, Bahamas," Sigma Xi Student Research Conference, Western Kentucky University, March, 1993.

Chai, Margaret, "Some Petrologic and Chemical Characteristics of a Transgressive Peat Deposit in San Salvador, Bahamas," Kentucky Academy of Science, Georgetown, October, 1993.

Dant, Michael and Wayne Hoffman, "Transportation in Logan County," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Howcroft, William and Nicholas Crawford, "Groundwater Supply Problems for Auburn, Kentucky and Delineation of the Auburn, Summers and Shakertown Springs Groundwater Basins," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Kaletsky, Kelly and Michael Trapasso, "Microclimates within Mammoth Cave," Annual Meeting, Association of American Geographers, Atlanta, Georgia, April, 1993.

Kaletsky, Kelly and Michael Trapasso, "Microclimate of Mammoth Cave, 11th International Congress of Speleology, Beijing, P.R. China, August, 1993.

Neuber, Melanie and Wayne Hoffman, "Housing in Logan and Simpson County," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Painter, Carmen, "Gravity Anomalies and Geometry," Kentucky Academy of Science, Georgetown, October, 1993.

Rasdall, Dow and Glen Conner, "Variation in Precipitation Over Consecutive Days," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Rasdall, Dow, "Variation in Precipitation Over Consecutive Days," Kentucky Academy of Science, Georgetown, October, 1993.

Snow, Mary, "The Ascent of Wind Power," Kentucky Academy of Science, Georgetown, Kentucky, October, 1993.

Snow, Richard, "Kentucky Winds and Renewal Energy," Kentucky Academy of Science, Georgetown, Kentucky, October, 1993.

Stark, John and Wayne Hoffman, "Economic Base of Simpson and Logan County," Fifth Biennial Open House for University Research, Western Kentucky University, April, 1993.

Sykes, Michael, "Paleontology and Identification of a Newly Exposed Roadcut West of Auburn, Kentucky," Sigma Xi Student Research Conference, Western Kentucky University, March, 1993.

Sykes, Michael and Deborah Kuehn, "Paleontology and Identification of a Newly Exposed Roadcut West of Auburn, Kentucky," Kentucky Academy of Science, Georgetown, October, 1993.

**FACULTY/GRADUATE STUDENT SEMINAR SERIES
1993 FALL SEMESTER SCHEDULE**

- August 25 All Faculty
 Introductions: Faculty Ongoing Research Activities
- September 8 Mark Turner
 *An Investigation into Improving Fluorescein Dye Tracing
 with Passive Charcoal Detectors*
- September 22 Stuart Foster and Mark Lowry II
 A New Approach to Measuring Segregation
- October 20 Rose Hullett
 Reflections on a Working Laboratory
- November 18 Ellen Bunch
 Air Dispersion Model for Montgomery County, Tennessee
- November 3 Kyle Bearden
 *Development of a Geographic Information System for
 Karst Groundwater Research*
- December 1 Mark Simpson
 *Relationship between North American Snow Cover
 and Atmospheric Teleconnection Patterns*

**FACULTY/GRADUATE STUDENT SEMINAR SERIES
1994 SPRING SEMESTER**

- | | | |
|----------|----|---|
| January | 26 | Michael Trapasso |
| | | <i>High Altitude Karst and Mass Wasting in the Tibetan Plateau Region of China</i> |
| February | 2 | David Keeling |
| | | <i>Political Geographical Perspectives on Environmental Change in Europe</i> |
| February | 16 | Kenneth Kuehn |
| | | <i>Coal Resources and Their Utilization in the United States</i> |
| March | 3 | Mark Lowry II |
| | | <i>Traditional Fishing vs. Modern Tourism: Conflict and Accommodation at Sua, Ecuador</i> |
| March | 9 | Bill Steinmetz |
| | | <i>Ashland, Kentucky Ozone Concentrations: Sources, Trends, Solutions?</i> |
| March | 23 | Reza Ahsan |
| | | <i>Geopolitics of Kashmir</i> |
| March | 29 | William Knight |
| | | <i>Where the Jobs Are and What Employers Need</i> |
| April | 13 | Paul Kimble |
| | | <i>Measuring the Impact Force of Throughfall Drops</i> |
| April | 20 | Craig Webb |
| | | <i>Reconstruction of the Original Settlement Plan of the Felts' House</i> |

April 25

Elizabeth McClellan

*The Secret Life of Garnets from Central-Southern
Norway*

April 27

Jay Nelson

*Storm Surges in Karst Aquifers of Mammoth Cave
National Park*

WESTERN XXI PROGRESS REPORT

During the past year various Departments and Centers within the University evaluated their priorities for action, 1991-1993, which were submitted in the Western XXI review. The Department of Geography and Geology's, Kentucky Climate Center's, Center for Cave and Karst Studies', and Center for Local Government's priorities for action and progress report are as follows:

DEPARTMENT OF GEOGRAPHY AND GEOLOGY

Western XXI Progress Report Priorities for Action, 1991-1993

A. REVIEW AND IMPROVE DEPARTMENTAL PROGRAMS/UNIT ACTIVITIES

1. Review/recommend changes in the present curriculum in each discipline as appropriate with a special emphasis on teacher education support.

RESPONSE: Accomplished. A major curriculum review has met these objectives.

2. Develop four new tracks of specializations.

RESPONSE: Partially accomplished. An environmental science major and a fossil fuel track has been initiated. The tourism track and environmental/engineering geology track have been aborted.

3. Recognize outstanding students in introductory courses and encourage them to pursue additional study in the department.

RESPONSE: Not accomplished.

4. Implement existing outcomes assessments measures.

RESPONSE: Accomplished.

- *5. Review and resubmit the Geology M.S. proposal.

RESPONSE: Not accomplished. Lack of resources.

RESPONSE: Not accomplished. Lack of resources.

- *7. Renovate the existing facilities in the geochemistry laboratory.

RESPONSE: Not accomplished. Lack of resources.

B. EXCELLENCE IN TEACHING AND LEARNING

- *1. Increase allocation for instructional materials to support departmental programs in geography, geology, hydrology and climatology. This will require an initial commitment in the first year and an annual maintenance amount thereafter.

RESPONSE: Not accomplished. Lack of resources.

2. Provide tenured and tenure-track faculty three hours of alternative assignment time per semester to develop required activities in research and public service, thereby increasing overall teaching effectiveness.

RESPONSE: Partially accomplished. Alternate assignment made based on availability.

- *3. Increase field/practical experiences in upper-division courses.

RESPONSE: Not accomplished. Lack of resources.

- *4. Increase allocation for library. eg. Georef, journals, reference material.

RESPONSE: Not accomplished. Lack of resources.

5. Increase exposure to computer technology and its applications in upper-division courses.

RESPONSE: Partially Accomplished. We have significantly increased our computer availability for upper level students.

6. Encourage use of team teaching in selected undergraduate and graduate courses.

RESPONSE: Not accomplished.

7. Implement better control over existing equipment and collection.

RESPONSE: Partially accomplished. In particular, we have had better security on collections.

C. CONTRIBUTE TO TEACHER PREPARATION/SCHOOL REFORM

1. Continued faculty involvement with the Kentucky Geographic Alliance in the conducting of professional development programs in instructional strategies leading to performance based student assessment in geography as required by House Bill 940.

RESPONSE: Accomplished.

2. Continue a cooperative effort with the WKU School of Education in revising the teacher education requirements for elementary, middle, and secondary school certification.

RESPONSE: Accomplished.

- *3. To provide National Geographic Society sponsored summer geography institutes for public school teachers (K-12) of the Commonwealth, and to continue our involvement in earth science summer workshop for teachers.

RESPONSE: Not accomplished. Lack of resources.

- *4. To provide seminars in public school settings to aid teachers in understanding the new trends and teaching strategies in geographic and geologic education.

RESPONSE: Not accomplished. Lack of resources.

5. To provide support to public school teachers in utilizing local resources to expand earth science awareness across the curriculum.

RESPONSE: Partially accomplished. The faculty regularly support public school efforts.

- *6. To provide department generated VCR video programs on geography and geology, and continue to provide department generated maps in a usable format for the public school teacher (K-12).

RESPONSE: Partially accomplished. Lack of resources has hampered our efforts, but we have produced two atlases for teacher use.

D. IMPROVE EFFECTIVENESS OF STUDENT COMMUNICATION

1. Encourage all upper division course instructors to require an oral presentation and a written report as a part of their course curriculum.

RESPONSE: Partially accomplished. Most upper division courses now require a paper and oral report.

2. Encourage all upper division course instructors to utilize, at least in part, a seminar

approach to teaching.

RESPONSE: Partially accomplished.

3. Require all upper level students to attend a short departmental workshop concerning word processing/graphics techniques.

RESPONSE: Not accomplished.

4. Encourage all students to utilize the English Department's writing laboratory and existing computing/printing facilities on campus.

RESPONSE: Accomplished.

5. Make upper level students aware of various professional meetings and other forums at which presentations of student research are encouraged.

RESPONSE: Accomplished.

E. CONTRIBUTE TO ECONOMIC DEVELOPMENT

- *1. To develop a regional Geographic Information System that would serve as the data base for future development decisions.

RESPONSE: Partially accomplished. Lack of resources has hindered the development.

2. To undertake service projects within our region that emphasize economic development.

RESPONSE: Accomplished.

3. Develop through our various Centers closer working relations with industry, business, and government entities.

RESPONSE: Accomplished.

4. Expand student internship to include all geography and geology tracks and options.

RESPONSE: Not accomplished.

F. PROMOTE STUDENT ACCESS AND DIVERSITY

- *1. Increase Graduate assistantships to attract outstanding students at competitive monetary levels, and establish one or two Fellowships for outstanding students for at least one year.

RESPONSE: Not accomplished. Lack of resources.

- *2. Obtain funding for a number of undergraduate workstudy grants and assistantships that will be available for the student's Junior and Senior years.

RESPONSE: Not accomplished. Lack of resources.

- *3. Initiate mail and visiting campaigns to recruit Geography/Geology students (for diversity) from U.S./Kentucky high schools and Junior Colleges, from recruitment in high schools on Indian Reservations and from abroad.

RESPONSE: Not accomplished. Lack of resources.

4. Establish a departmental referral procedure for students who need tutorial assistance.

RESPONSE: Partially accomplished.

5. Establish a "Help Lab" for underprepared students in 100 level classes.

RESPONSE: Not accomplished.

6. Develop additional departmental level activities and programs to inform students of career opportunities.

RESPONSE: Accomplished.

7. Increase faculty sensitivity to nontraditional students by actively recruiting such students and by creating a classroom environment that recognizes their special needs.

RESPONSE: Partially accomplished.

G. DEVELOP HUMAN RESOURCES

1. Every effort will be made to combat all forms of discrimination based on race, gender, creed, age, or disability within the department, campus and community.

RESPONSE: Accomplished.

2. Priority will be given to hiring faculty members from underrepresented and minority sections of the population.

RESPONSE: Accomplished.

3. The department will actively pursue a policy of multiculturalism in all of its endeavors.

RESPONSE: Accomplished.

4. Passive discrimination which effectively excludes members of the department from fully participating in activities by failing to recognize their special needs will be eliminated.

RESPONSE: Accomplished.

5. The department will make every possible effort to combat the use of sexist language in all forms, especially in the classroom and in all written materials produced in the department (including sexist course titles).

RESPONSE: Accomplished.

6. The department will actively campaign for the establishment of a university committee to study the needs of care-givers of all kinds within the university community.

RESPONSE: Accomplished.

7. The display of offensive materials will be prohibited in all public work areas. This prohibition includes all forms of pornography and material which reinforces racial and sexual stereotypes.

RESPONSE: Accomplished.

H. INCREASE EXTERNAL FUNDING

1. Increase external funding to the Department by an average of five percent per year.

RESPONSE: Accomplished.

2. Provide reduced teaching loads for those faculty writing research grant proposals.

RESPONSE: Not accomplished.

3. Provide reduced teaching loads for those faculty who obtain significant external funding.

RESPONSE: Accomplished.

4. Submit at least one equipment grant per year to the National Science Foundation or other appropriate funding source.

RESPONSE: Not accomplished.

5. Publicize the Department's research and service capabilities to the public and private sectors.

RESPONSE: Accomplished.

I. IMPLEMENT NEW EMPHASES CONCERNING PROFESSIONAL RESPONSIBILITIES OF FACULTY

- *1. Provide \$1000.00 per academic year to each full-time faculty member for professional travel. This is a base figure with no conditions.

RESPONSE: Not accomplished. Lack of Resources.

2. Reduce the standard teaching load for graduate faculty to 9 hours. With justification, this can be reduced to 6 hours on an individual basis.

RESPONSE: Not accomplished. Lack of Resources

3. Enhance requirements for graduate faculty status to include active engagement in research activity and presentation.

RESPONSE: Accomplished.

4. Enhance requirements for graduate faculty status to include regularly serving as a member of the graduate student advisory committees.

RESPONSE: Accomplished.

5. Establish and implement a departmental faculty/graduate student research seminar that will involve all faculty members. This will facilitate the diffusion of cultural, social, and intellectual vitality throughout the department.

RESPONSE: Accomplished.

6. Distinguish between refereed and unrefereed journal publications in activity reports and evaluations of faculty, and give substantially greater emphasis for refereed publications.

RESPONSE: Accomplished.

*Additional Resources Required. See Resources Worksheet.

THE KENTUCKY CLIMATE CENTER
Department of Geography and Geology

Western XXI Progress Report
Priorities for Action, 1991-1993

E. CONTRIBUTE TO ECONOMIC DEVELOPMENT

- *1. Publish climatological summaries for use in economic development activities.

Response: Accomplished. Climatological summaries prepared and published in July 1992.

- *2. Deliver, in an acceptable timeframe, climatic information to users within Kentucky and its region.

Response: Continuing. Capability for computer generated FAX obtained in 1993.

3. Conduct studies and analysis of climate effects of critical sectors of the economy.

Response: Continuing. Several studies completed including capability to calculate wet-dry day probabilities and frequency of extreme rainfall events.

J. OTHER

- *1. Develop a system of climatic data acquisition and storage using CD ROM capabilities.

Response: Partially accomplished. Climatic data obtained and used from six CR-ROM discs. Updates still required.

- *2. Upgrade computer and plotter capabilities to enhance instructional capability in climatology.

Response: Accomplished. Ten Tektronix Graphics terminals and one DEC 340 graphics terminal obtained from grants.

3. Implement a climatic data quality control to assure validity of reported data.

Response: Incomplete. Student funding insufficient to implement.

4. Develop climatic information from available data sources.

Response: Continuing. Several derived information publications completed. Grant money obtained to digitize daily climatic data.

5. Identify to the National Climatic Data Center Kentucky's needs for climate related data, information, and services.

Response: Recurring annually.

6. Cooperate with the Midwestern Climate Center to develop and disseminate regional climate information.

Response: Continuing. Very close interrelationship has been developed. Climatic impact statements provided by the Kentucky Climate Center each month.

THE CENTER FOR CAVE AND KARST STUDIES
Department of Geography and Geology

Western XXI Progress Report
Priorities for Action, 1991-1993

A. REVIEW AND IMPROVE DEPARTMENT PROGRAMS

1. Maintain our status as being an internationally recognized karst center by improving our program in research, public service and education.

Response: Partially accomplished. Some progress has been made in meeting the five specific objectives.

B. PROMOTE EXCELLENCE IN TEACHING AND LEARNING

1. Offer an exchange of professors and graduate students for short term research projects (one to three months) with karst centers in China, France, Yugoslavia and other countries.

Response: Partially accomplished. A Chinese professor was recently in residence at the Center on a cooperative research project.

2. Sponsor national and international karst conferences in cooperation with Mammoth Cave National Park, the National Speleological Society and other karst organizations.

Response: Not accomplished.

- *3. Expand our resources for groundwater research and instruction by purchasing needed equipment.

Response: Partially accomplished - <10% due to lack of resources.

- *4. Attract more graduate students by expanding our program and offering more graduate assistantships.

Response: Partially accomplished - <10% due to lack of resources.

- *5. Expand hardware and software computer facilities to facilitate instruction and research on groundwater modeling.

Response: Partially accomplished. Computer equipment has been enhanced.

C. CONTRIBUTE TO TEACHER PREPARATION/SCHOOL REFER

1. Increase our service to schools by giving more lectures and field trips to high school science classes about karst and karst environmental problems.

Response: Partially accomplished.

D. IMPROVE EFFECTIVENESS OF STUDENT COMMUNICATION

1. Publish a yearly Bulletin containing karst papers by faculty, students and other karst scientists. This could be in cooperation with the Central Kentucky Cave Survey and/or Mammoth Cave National Park.

Response: Partially accomplished. Working on preparing a bulletin. Moreover, the Center has been active in preparing educational facilities about karst at the University's Lost River Cave.

2. Publish karst MS theses written by graduate students in our department.

Response: Not accomplished.

E. CONTRIBUTE TO ECONOMIC DEVELOPMENT

1. Increase our program of public service to homeowners, businesses and government agencies by making site visits and offering advice about groundwater, sinkhole flooding, sinkhole collapse and radon problems.

Response: Partially accomplished.

F. PROMOTE STUDENT ACCESS AND DIVERSITY

1. Increase efforts to attract graduate students from diverse areas (including other nations) by maintaining the Centers international reputation in karst research and education.

Response: Not accomplished.

G. DEVELOP HUMAN RESOURCES

No priorities for action are presented.

H. INCREASE EXTERNAL FUNDING

1. Obtain more grants and contracts to support research and to provide graduate assistantships.

Response: Not accomplished.

I. IMPLEMENT NEW EMPHASIS CONCERNING PROFESSIONAL RESPONSIBILITIES OF FACULTY

1. Increase the publication of research by faculty and students in refereed journals.

Response: Accomplished - Research in reference journals has increased.

J. OTHER

- *1. Employ a "secretary-draftsperson-researcher" to work for the Center.

Response: Not accomplished. Lack of resources.

THE CENTER FOR LOCAL GOVERNMENT
Department of Geography and Geology

Western XXI Progress Report
Priorities for Action, 1991-1993

A. REVIEW AND IMPROVE UNIT ACTIVITIES

1. Visit each county judge and mayor within Western's service region to explain the goals and objectives of the Center.

Response: Partially accomplished. Numerous judges and mayors have been contacted.

2. To initiate projects with the Green River ADD, the Lincoln Trail ADD, the Lake Cumberland ADD, the Pennyrile ADD, and the Purchase ADD.

Response: Partially accomplished. A project was initiated with the Pennyrile ADD in 1992.

B. EXCELLENCE IN TEACHING AND RESEARCH

No priorities for action are presented.

C. CONTRIBUTE TO TEACHER PREPARATION/SCHOOL REFORM

No priorities for action are presented.

D. IMPROVE EFFECTIVENESS OF STUDENT COMMUNICATION

No priorities for action are presented.

E. CONTRIBUTE TO ECONOMIC DEVELOPMENT

- *1. To develop a regional Geographic Information System that would service as the data base for future developmental decisions.

Response: Partially accomplished. A GIS system has been established but needs additional resources.

2. To undertake service projects within our region that emphasize economic development.

Response: Accomplished.

3. To produce an economic development atlas for the Commonwealth.

Response: Not accomplished.

4. To become a data archive for a multitude of economic and census data.

Response: Partially accomplished.

5. Increase student internship possibilities.

Response: Partially accomplished.

F. PROMOTE STUDENT ACCESS AND DIVERSITY

No priorities for action are presented.

G. DEVELOP HUMAN RESOURCES

No priorities for action are presented.

H. INCREASE EXTERNAL FUNDING

1. To actively seek grants from various government agencies.

Response: Partially accomplished. We are presently working on a federal grant application.

I. IMPLEMENT NEW EMPHASES CONCERNING PROFESSIONAL RESPONSIBILITIES OF FACULTY

No priorities for action are presented.