RESOLUCIÓN No 241 - 18 ABR 2012
NEUQUÉN

VISTO:
El Expediente Nº 4350-0001/12 del registro de la Dirección Provincial de Recursos Naturales, dependiente de la Coordinación General del Ministerio de Desarrollo Territorial, caratulado: “Permiso de Investigación Dr. George BROOK, Datasiones Paleoclimáricas para el centro-oeste de la Argentina en estalagmitas de las cuevas de Cuchillo Curá Nani”;

Y CONSIDERANDO:
Que el Director General de Control de los Recursos Faunísticos y Áreas Naturales Protegidas, solicita que por la vía que corresponda, se le otorgue al Dr. en Geografía George A. BROOK, el permiso correspondiente para ingresar al área natural protegida Cuchillo Curá, con el objetivo de realizar en jurisdicción de la mencionada área, el proyecto de investigación científico denominado: “Datasiones Paleoclimáticas para el centro-oeste de la Argentina en estalagmitas de las cuevas Cuchillo Curá, Neuquén”;

Que conforme el dictamen producido por el equipo técnico de Áreas Naturales Protegidas a fechas 02 y 03 del Expediente del visto, el trabajo de investigación que realizará el profesional, permitirá estudiar el paleoclima de la Provincia del Neuquén mediante el examen de las estalagmitas, como parte de un estudio más amplio que busca obtener el primer registro de alta resolución del cambio climático en diversos ámbitos de Argentina en los últimos 130.000 años;

Que las actividades de investigación propuestas, se enmarcan en los objetivos de conservación establecidos por el Artículo 3º, apartado b) de la Ley 2594, por lo que corresponde otorgar el permiso solicitado;

Que en base a las facultades emanadas del Artículo 6º, inciso f) de la Ley Provincial 2594, corresponde emitir la Norma Legal respectiva;

POR TANTO:

EL MINISTRO DE DESARROLLO TERRITORIAL RESUELVE:

Artículo 1º: AUTORIZASE al Doctor en Geografía Señor George BROOK, Pasaporte Nº 210.566.046, a realizar en jurisdicción del Área Natural Protegida Cuchillo Curá, el proyecto de investigación científico denominado: “Datasiones Paleoclimáticas para el centro-oeste de la Argentina en estalagmitas de las cuevas Cuchillo Curá, Neuquén”.

Artículo 2º: DETERMINASE que la presente autorización tendrá vigencia por el término de un (1) año contado a partir de la fecha de notificación de la presente.

Artículo 3º: ESTABLEZCASE que la persona autorizada en el artículo 1º deberá, una vez terminado el plazo establecido en el Artículo 2º, presentar ante la Dirección General de Control de los Recursos Faunísticos y Áreas Naturales Protegidas, el informe final de la investigación llevada a cabo en original y copia.

Artículo 4º: NOTIFIQUESE al interesado a través de la Dirección General de Control de los Recursos Faunísticos y Áreas Naturales Protegidas

Artículo 5º: Regístrese, comuníquese y cumplido, archívese.

FIRMADO: BERTOYA

[Señalización de firma]

[Señalización de sello]

HIGH-RESOLUTION PALEOCLIMATIC RECORDS FROM STALAGMITES IN ARGENTINE CAVES

George A. Brook
Department of Geography
University of Georgia
Athens GA 30602
USA

Introduction

Stalagmites are now a major source of high-resolution climate data for many regions of the world where caves occur. They can be dated by U-series methods so accurately that stalagmite age data are being used to correct ice core and ocean core chronologies and calibrate radiocarbon ages. Stalagmites can provide color, UV-induced luminescence, and oxygen and carbon isotope data at decadal, annual, and even sub-annual scales. In addition, petrographic information can be obtained from thin section studies. These climate proxies can provide a great deal of information about past climate conditions of use is assessing the impact of changing climates on human activities, and the possible impacts of global warming in particular areas.

Although there have been detailed studies of stalagmites in many areas of the world, such as China, there have been very few in South America and, so far, none in Argentina. There has been one study of stalagmites in Brazil that appeared in Science. We propose to examine stalagmites from several areas of Argentina along transects running North-South and West-East through the country. We will extract information on past climate change from the stalagmites we study.

Objectives

The main aim of the proposed research is to produce the first high-resolution record of climate change for several areas of Argentina for the last 130,000 years. This record will help us to understand how climate affected Argentina during both glacial and interglacial times, as well as during more recent periods such as the Little Ice Age (LIA), Medieval Climate Anomaly (MCA), and Younger Dryas (YD). In particular, data for the last 15,000 years will be of great use to archaeologists studying the first humans to enter Argentina and how they adapted to climate changes. Currently, there is no continuous record of climate change for this period so it is difficult to know if harsh climate conditions can explain periods with little evidence of human occupation.

Materials and Methods

To complete the work proposed we will need to remove selected stalagmites from caves in different parts of Argentina. Every effort will be made to minimize the impact of this activity on the caves examined by choosing sites away from the main tourist or caving routes. In Conservation Areas stalagmites will be selected for removal in consultation with officials and will only be removed with their permission.

In the laboratory the stalagmites collected will be cut along the central growth axis (along their length). One surface will be scanned to record color, and then it will be subjected to UV light in a dark room and the resulting luminescence recorded with a digital camera equipped with the necessary filters. Samples will be drilled from one half of the stalagmite for O-18 and C-13 isotope analysis and for U-series dating. Finally, this half will also be used to prepare thin sections for petrographic studies of the stalagmite carbonate. All results will be combined to produce a record of climate change in the area over the period represented by the stalagmite. If possible (depending on size) one half of the stalagmite will be archived to preserve the record contained.

A final report on the research will be submitted to Conservation Area authorities for their information and use. Research results will be presented at conferences in Argentina and at international conferences elsewhere, and published in Argentine and international journals. Where tourist caves are studied, information suitable for display will be provided to the cave authorities.

Area of Study

Areas of study will be determined by the occurrence of caves and will be determined in consultation with members of the Argentina Speleological Association. We hope to study stalagmites in caves along N-S and W-E transects to
determine how past climates varied with latitude and longitude. In the first stage of the work we hope to examine
caves in Mendoza and Neuquén and in particular the Las Brujas and Cuchillo Cura caves.

**Period of Study**

The study is likely to be for 5 years with the initial period of work in Mendoza and Neuquén lasting from 2009-2011.

**Justification for Working in Conservation Areas**

In many parts of Argentina there are few caves that contain stalagmites. As caves are rare in many parts they are
often Conservation Areas. With so few caves, there is often little choice about where to do the work and as a result it
is often necessary to work in protected caves such as Las Brujas and Cuchillo Cura.

**Conservation Issues**

Stalagmites are such a valuable paleoclimate resource that it is essential that they are studied. However, to study
stalagmites they must be removed from caves and so this form of research does lead to some damage to the cave
environment. The impact of this damage can be minimized by selecting stalagmites in remote parts of caves and only
removing a very few deposits. We do everything we can in our research to minimize damage and have even
developed a drilling device that can drill vertical cores from large stalagmites so as to access the data they contain
without much damage to the cave. However, with smaller stalagmites they must be removed for study.

This is one area where conservation and science must both be considered. We plan to remove only stalagmites
suitable for our research and in conservation areas only with the permission of the local authorities. Damage will be
minimal and the scientific benefits considerable.

**Budget**

All field and scientific costs of the research proposed will be covered by NSF and other grants to Brook and by
support he is given by the University of Georgia. It is expected that the cost of the proposed research will exceed US
$30,000.

**Published Paleoenvironmental Research by Brook Since 1999 (cave studies in red)**

Brook, G. A., Marais, E., Cowart, J. B. (1999). Evidence of wetter and drier conditions in Namibia from tufas and

rainfall and ENSO since A.D. 1550 from layering in stalagmites from Anjohibe Cave, Madagascar. The


Southern Oscillation, and what the future may hold. The Arab World Geographer 3(2): 78-96.

Robbins, L.H., Murphy, M.L., Brook, G.A., Ivester, A.H., Campbell, A.C., Klein, R.G., Milo, R.G., Stewart, K.M.,

Robbins, L.H., Murphy, M.L., Brook, G.A., Campbell, A.C., Melear, N., Downey, W.S. (2001). Late Quaternary
archaeological and paleoenvironmental data from sediments at Rhino Cave, Tsodilo Hills. South African Field

Cave in the Western Desert of Egypt: Morphology and evidence of Quaternary climatic change. Cave and Karst


LaMoreaux, H.K., Brook, G.A., Knox, J.A., 2009. Late Pleistocene and Holocene environments of the Southeastern USA from the stratigraphy and pollen content of a peat deposit on the Georgia Coastal Plain. Palaeoengeography, Palaeoclimatology, Palaeoecology (accepted with revisions).


CURRICULUM VITAE
GEORGE ALBERT BROOK
December 20, 2011

1. PERSONAL DATA
   Place of Birth: Sunderland, England
   Nationality: United States Citizen
   Address: Department of Geography
            University of Georgia
            Athens GA 30602, U.S.A.

2. PRESENT POSITION
   Merle C. Prunty Professor of Geography (2001-), and Director, University of Georgia Luminescence Dating Laboratory (2001-). Appointed to Graduate Faculty November 1978. Granted Tenure September 1981.

3. FORMER POSITIONS AT UGA
   Assistant Head, Department of Geography, May-August 1993
   Acting Head, Department of Geography, 1993-94
   Head, Department of Geography 1994-99
   Director, Center for Archaeological Sciences, University of Georgia, 1994-2005
   Head, Department of Geography, Jan 2006-June 2011

4. UNIVERSITIES ATTENDED AND ACADEMIC RECORD
   Edinburgh University, Edinburgh, Scotland. B.Sc. Geography 1967, awarded First Class Honors.

4. HONORS
   1967 Awarded First Class Honors B.Sc.
   1967 Leverhulme Award (for performance in B.Sc. final examinations).
   1973-75 National Research Council of Canada Postgraduate Scholarship
   1974 Distinction in Ph.D. Comprehensive Examinations
   1983 University of Georgia M.G. Michael Award for Excellence in Research ($2,000 cash award)
   1987-88 Africa Regional Research Fulbright Senior Scholar Award to undertake 9 months of research in Botswana, Zambia, Zimbabwe, Zaire, and Kenya. Cooperative research and affiliations were as follows: Botswana - Affiliation with the Department of Earth Sciences, University of Botswana, Gaborone; Zambia - Research Affiliate of the Department of Geography, University of Zambia, Lusaka; Zimbabwe - Fulbright Research Associate in the Department of Geology, University of Zimbabwe, Harare. Cooperative research with the Zimbabwe Department of National Parks and Wildlife Management; Zaire - Member of the Semiliki Research Expedition headed by Noel T. Boaz, Director of the Virginia Museum of Natural History, Martinsville, VA. Cooperative research with the Institut Zairois Pour la Conservation de la Nature; Kenya - Affiliation with the National Museums of Kenya (Director R.E. Leakey). Cooperative research with the Caving Group of East Africa.
   1990 Chairman of the Working Group "Desert Paleoenvironments from Cave Sediments" within UNESCO's International Geological Correlation Program 252 "Past and Future Evolution of Deserts."
   1990 Chairman of Working Group "Paleoenvironments of Presently Arid Karst Areas" within IGU Study Group "Anthropogenic Impact and Environmental Changes in Karst."
1991 "Study in a Second Discipline," University Faculty Development Award, University of Georgia ($15,000 to Department of Geography).


1997-02 Co-leader of the "Hydrological Dynamics" working group within the UNESCO IGCP 413 "Future Dryland Environmental Change from Past Dynamics."

1998 Visiting Professor, Department of Geography, Ain Shams University, Cairo, Egypt, Feb. 28-March 16 ($2,000 travel).

1998 University System of Georgia Chancellor's Award ($1,500) for "China 1998 Faculty Development Seminar", Nanjing, China, July 1-July 30.

1999 Awarded prize of $500 by the Editorial Board of Physical Geography for “Cyclicity in precipitation and stream discharge in Georgia and relationships with the Southern Oscillation”, judged as one of the four best papers presented at the Association of American Geographers ENSO symposium in Hawaii, March 1999.

2001-02 University Partnership Program, Binational Fulbright Commission Visiting Professor, Ain Shams University, Cairo, Egypt, 3 weeks in March 2001 and 3 weeks in March 2002.


2005- U.S. Member of IGU Commission C0402-Arid Land, Humankind and Environment.

2007 Visiting Professor, Department of Geography, Ain Shams University, Cairo, Egypt, April 12-22 ($2,000 travel).


2009 Member of the Core Committee of the Third LIMPACS (IGBP, PAGES) Conference, Chandigarh, India, March 5-8.

2010 Voted an honorary member of the Federación Argentina de Espeleología (Argentine Federation of Speleology), November, 2010.

5. RESEARCH INTERESTS, FIELD EXPERIENCE AND TRAVEL

Research Interests:
1) Quaternary climate change, 2) Geoarchaeology, 3) Arid lands, 4) Karst.

Field Experience:
Extensive fieldwork in Argentina, Belize, Canada, the U.S.A., Mexico, South Africa, Botswana, Namibia, Zimbabwe, Zambia, Zaire, Kenya, Somalia, Turkey, Oman, Egypt, Madagascar and China.

Travel:
Travel in 15 African countries (Egypt, Somalia, Botswana, Namibia, Zambia, Zaire, Rwanda, Tanzania, Kenya, Malawi, Zimbabwe, Swaziland, Lesotho, South Africa, Madagascar, and Mozambique), 7 countries in the Americas and Caribbean (Argentina, Belize, Brazil, Mexico, U.S.A., Canada, Jamaica, Puerto Rico), 18 European countries (U.K., Portugal, Spain, France, Monaco, Luxembourg, Italy, Switzerland, Austria, Germany, Holland, Belgium, Slovenia, Croatia, Greece, Hungary, Czech Republic, Slovakia, and Turkey), 3 countries in Arabia (United Arab Emirates, Oman, Saudi Arabia), and 5 countries in E. and SE Asia and the Pacific (Australia, India, Singapore, Malaysia, China).

6. INTERNATIONAL COLLABORATIVE AGREEMENTS DEVELOPED

1. Department of Geography, University of Georgia and the Department of Geography at Ain Shams University, Cairo, Egypt, 2000-2005, renewed in 2005 for a further five years and currently being renewed again.

2. Center for Applied Isotope Studies and Luminescence Dating Laboratory, University of Georgia, and the Instituto de Investigaciones Antropológicas, Universidad Nacional Autónoma de México (UNAM), Mexico City, Mexico, 2006-2011.

7. FUNDING

1. Geoarchaeology of the Oconee Reservoir Site, Greene County. Georgia Power Co. subcontracted through the Dept. of Anthropology, University of Georgia, 1978 ($8,094).
8. Richard B. Russell multiple resource areas, geomorphology of three prehistoric sites in Elbert County, Georgia. Project included in funding from the National Parks Service to Southeastern Wildlife Services, Inc., 1981 ($700).
10. The late Quaternary paleoanthropology of Northeastern Somalia (with S. A. Brandt). University of Georgia Research Foundation, 1981-1983 ($12,000).
19. Funds to establish a Palaeoecology Laboratory in the Department of Geography, Center for Archaeological Sciences, and University of Georgia Museum of Natural History ($8,000 from University of Georgia), 1989.
20. Paleoenvironmental data from speleothems in Karain Cave, Turkey. Invited research by Professor Isin Yalcinkaya, University of Ankara, Turkey, University of Georgia Research Foundation and College of Arts and Sciences ($3,000), 1989.
26. Dissertation Research: Late Quaternary climate variation within the Maya Lowlands, Belize, Central America as evidenced by variations in speleothem deposition (with J.W. Webster). National Science Foundation, 1996-97, $9,975.
29. Plio-Pleistocene fossil breccias in caves of the Koanaka Hills, Botswana. Collaboration invited by Blythe Williams and Diane Waddle of the Department of Biological Anthropology and Anatomy, Duke University Medical Center, and Callum Ross, Department of Anatomical Sciences, SUNY, Stonybrook. ~$1,000 was provided by grant from Duke University for fieldwork in Botswana, June 1995.
31. Establishment of a TL/OSL Dating Laboratory at the University of Georgia. University of Georgia Research Foundation, 1998, $130,000.
32. Dissertation Research: Human-environmental relationships in Coastal Plain Georgia based on high-resolution paleoenvironmental records from three peat deposits (with H. LaMoreaux). National Science Foundation, 1998-99, $9,665.
36. High-resolution climate records for China for the last 2,000 Years from cave stalagmites and gazetteer records (with C.P. Lo). University of Georgia Research Foundation, 1999-2001, $12,850.
37. Environmental change in Namibia during the last 300 ka from cave speleothems, tufas and fluvial sediments. National Science Foundation, 2000-2007, $328,938.
38. Development of a study abroad course, The environment and archaeology of Egypt, in association with a Binational Fulbright Grant Between Ain Shams University, Cairo and the University of Georgia”. University of Georgia International Program Development Fund ($2,400) and Dean, College of Arts and Sciences ($500), 2000-2001, $2,900.
39. Doctoral Dissertation Research: High-resolution climate and land-use records from cave stalagmites and county gazetteers for China over the last 2000 years (with Honglin Xiao). National Science Foundation, 2000-2001, $10,000.
41. Archaeological and paleoenvironmental investigation of the initial appearance of domesticated livestock in the Lake Ngami region of Botswana and the LSA background (with Larry Robbins). National Science Foundation, 2003-2007, Georgia portion of grant $56,286.
44. A multi-proxy approach to understanding late Pleistocene climate change in Namibia, Botswana, and NW South Africa. National Science Foundation 2007-2010 ($388,336).
8. PUBLICATIONS

Journals


Yin, Z-Y., Brook, G. A. (1992). Which wells have higher yields, those located by "the lay of the land" or those located by fracture-trace mapping? Water Well Journal 46(9): 51-53.


Brook, G. A., Hanson, M. (1986). Quantitative analysis of depression morphology near Browns Town, Jamaica, and bedrock factors influencing cockpit or doline development. Proc. of the 9th International Congress of Speleology, Barcelona, Spain, V. 1, 124-127 (not presented).


Books

Monographs and Chapters in Books


Published Reports


Brook, G. IV CONGRESO ARGENTINO DE ESPELEOLOGÍA – See www.fade.org.ar

Conference Presentations and Published Abstracts (presented by Brook unless otherwise indicated).


Book Reviews


9. OTHER PROFESSIONAL ACTIVITIES

Reviewer


Funding Agencies: Reviewer for: NSF Division of International Programs; NSF Geography and Regional Science Program; NSF Surficial Processes Program; NSF Anthropology Program; NSF Atmospheric Sciences Program, Georgia Cooperative Federal-State Water Resources Research Program, U.S. Dept. of Interior; NASA Planetary Geology Program; National Geographic Society; NOAA Climate and Global Change Program; Deutsche Forschungsgemeinschaft, Bonn, Germany; Inter-American Institute for Global Change Research.

Memberships

Member of IGU Working Group "Anthropogenic Impact and Environmental Changes in Karst."
Chairman of Working Group "Paleoenvironments of Presently Arid Karst Areas" within IGU Study Group "Anthropogenic Impact and Environmental Changes in Karst."
Member of the International Geological Correlation Programme, Project 252 - Past and Future Evolution of Deserts.
Chairman of Working Group "Desert Paleoenvironments from Cave Sediments." within IGCP-252 - Past and Future Evolution of Deserts.
Member of the Southern African Association of Geomorphologists.

Organizer, Chair, or Discussant

Chair of Special Session on "Land Use and Environmental Problems in Karst Terrains II," Association of American Geographers Annual Conference, Louisville, Kentucky, April 1980.
Discussant for Special Session "Student Papers on Karst," AAG Annual Conference, Louisville, Kentucky, April 1980.
Chair of Session: Geomorphology: Gemorphologic Models at AAG Annual Meeting, Baltimore, March 19-22.
Chair of Session: "Quaternary Climate Change." Association of American Geographers Annual Meeting, Fort Worth, Texas, April 1-5, 1997.
Co-coordinator of Session 1 at the Third LIMPACS (IGBP, PAGES) Conference in Chandigarh, India, March 5-8, 2009.

Invited Lectures


"Cave and Rock Shelter Evidence of Past Climates in East and Southern Africa." Department of Geology, University of Minnesota, Feb. 15, 1996.

"Potential of Cave Speleothems to Provide High-resolution Paleoenvironmental Records". Department of Geology, University of Minnesota, Minneapolis, Minnesota, Feb. 16, 1996.


"Paleoclimatic Significance of Karst Features in Deserts," Department of Geography, Ain Shams University, Cairo, Egypt, March 3, 1998.


"Medium and High Resolution Paleoclimatic Data from Cave Speleothems: A New Approach to Explaining Major Historical and Archaeological Events," Department of Geography, Texas A&M University, College Station, Texas, November 20, 2000.

"Environmental Change and Human Activities: Evidence from Cave Stalagmites". Department of Geology Journal Club, University of Georgia, March 29, 2001.

“Cave Speleothem Evidence of Environmental Change: Some Recent Results from Africa, the Americas and Madagascar”. Department of Geography and Geology, Georgia Southern University, Statesboro, April 5, 2001.


“Some Recent Research in Southern Africa and Central America”. Department of Geography, Ain Shams University, Cairo, Egypt, April 17, 2007.

“Reminiscences of good times: adventures in two countries and some things to forget”. Department of Geography, Ain Shams University, Cairo, Egypt, April 17, 2007.


10. TEACHING EXPERIENCE


Teaching Assistant, McMaster University, Hamilton, Ontario, Canada, 1971-1975.

Assistant Professor, University of Georgia, Athens, Georgia 30602, U.S.A., 1975-1981.

Associate Professor, University of Georgia, Athens, Georgia 30602, U.S.A., 1981-1987.
Professor, University of Georgia, Athens, Georgia 30602, U.S.A., 1987-present.
Merle C. Prunty Jr. Professor of Geography, UGA, Jan. 2001-present.

Courses Taught (U=undergrad only), U/G=undergrad and grad, G=grad only):
1) Earth Science Survey (U), 2) Introduction to Landforms (U), 3) Regional Geography of North America (U), 4) Introduction to Hydrology (U), 5) Advanced Terrain Analysis (U/G), 6) Advanced Geomorphology (U/G), 7) Global Environmental Change During the Quaternary (U/G), 8) Field Methods in Physical Geography (U/G), 9) Geomorphology and Environmental Change in Karst and Arid Environments (U/G), 10) Seminar in Geomorphology (G), 11) Seminar in Quaternary Paleoenvironments (G), General Geomorphology (U).

11. M.A., PH.D. AND POST-DOCTORAL ADVISEMENT

**Doctoral**
- Chin-hong Sun, (1986) - National Taiwan University, Taiwan.
- Jerry Davis, (1987) - San Francisco State University
- Keun Bai Yu, (1986) - Seoul National University, S. Korea
- Rudi Kiefer, (1986) - University of North Carolina at Wilmington
- Zhi-Yong Yin, (1990) - Georgia State University
- Joseph Garcia, (1992) - University of South Florida
- Steve Harper, (1996) (Geology) - East Carolina University
- Thomas Feeney (1997) - Shippensburg University
- Heidi Lamoreaux (1999) - Sonoma State University
- Sydney Bacchus (Ecology) (1999)
- James Webster (2000) - U.S. EPA, Atlanta, Georgia
- Shaw-Wen Sheen (2001) - National Tainan Teacher’s College, Taiwan
- Honglin Xiao (2003) - Elon University, Elon, NC
- Fuyuan Liang (2008) - Northwest Illinois University

**Presently advising Lixin Wang and Pete Akers**

**Masters**
- Chris Ploetz (2011) - Pete Akers (2011)

**Advisory, Reading or Examining Committees**
- Amy K. Van Nostrand (M.S. Geology, 1981) - Margaret Rafter (M.A. Geology, 1997)
- Ken Eubanks (M.S. Geology, 1985) - James Baldini (M.A., Geology, 1999)
- Robert Shipman (M.A. Geography, 1989) - Joseph Charles (M.A. Geography, 1999)
- Ronnie Rogers (M.A. Geography, 1990) - Al Bruns (M.A. Forestry, 2000)
- Joseph Nicholas (Ph.D. Geography, 1991) - Wendy Weaver (M.S. Geology, 2000)
- Katherine Schipke (M.A. Geography, 1992) - Kai Wang (Ph.D. Geography)
- Mike Harrison (M.A. Geography, 1992) - Matthew Doede (M.A. Geography)
- Steve Williams (M.A. Geography, 1994) - Keith Goggins (M.S. Geology)
- Raad Delaimi (Ph.D. Geology, 1996) - Tim Anderson (M.A. Geography)
- Jill Oppenheim (M.A. Geography, 1996) - Mark Gimigliano (M.A. Geography, 1997)
- Brad Suther (M.S. Geography, 2006) - Jason Ridgeway (M.S. Geography, 2006)
Michelle Luebke (M.S. Geography, 2006)            Heather Bartley (M.S. Geography, 2006)
Presently on committees of Jason Meadows and Jiaying Wu (MS Geography) and Genevieve
Holdridge (Ph.D. Geography)

4.  Post-Doctoral Supervision
Chin-Hong Sun, January-July 1986.
Keun-Bae Yu, May-December 1986.
Pradeep Srivastava, December 2002-August 2005

12.  SERVICE ACTIVITIES

1.  Departmental

1975-76  Departmental Secretary in charge of minutes.
1976-77  Chairman, Computer Liaison Committee; Member, Staffing and Equipment Committees.
1977-78  Member, Computer Liaison, Curriculum and Space Utilization Committees.
1978-79  Member, Curriculum, Graduate Studies, and Equipment and Space Utilization Committees.
          Member, Budget and Resources Committee for Departmental Self-Study Report.
1979-80  Member, Undergraduate Studies and Equipment Committees.
1980-81  Member, Graduate Studies and Staffing Committees.
1981-82  Chairman, Staffing Committee.
1982-83  Chairman, Search and Screening Committee and Equipment Coordinator.
1983-84  Acting Chair and Member, Search and Screening Committee; Member, Curriculum Committee.
1985-86  Member, Curriculum Committee.
1987-88  Member, Graduate Studies Committee.
1988-89  Chairman, Search and Screening Committee.
          Member, Graduate Studies Committee.
1989-90  Member, Graduate Studies Committee.
1990-91  Member, Graduate Studies Committee.
1991-92  Graduate Coordinator; Member, Graduate Student Relations and Search and Screening Committees.
1992-93  Assistant Head of Geography May-August, 1993; Graduate Coordinator; Member, Graduate Student Relations and "Climatology" Search and Screening Committees.
1993-94  Acting Head of Geography
1994-99  Head of Geography
1999-00  Member, Graduate Studies Committee; Member Search and Screening Committee for Franklin Fellow Position.
2000-01  Member, Curriculum Committee, Member, Program Review Oversight Committee.
2004-05  Chair Ad Hoc Committee to establish P&T Guidelines, Chair of Advisory Committee (elected).
2005-06  Chair of Curriculum Committee, Member of Advisory Committee (elected).
2011-12  Member of Advisory Committee (elected), member Curriculum Committee.

2.  College and University

1979-82  Geography Department College of Arts and Sciences Faculty Senate representative.
1979-82  Member, College of Arts and Sciences Faculty Relations Committee.
1980-81  Member, ad hoc grievance committee appointed by the Dean of the College of Arts and Sciences.
1982-85  Member, Physical Sciences Area Committee on Appointments and Reappointments to Graduate Faculty.
1983-84  Member, Graduate School Committee Reviewing Graduate Programs in Social Science Education.
1991-92  Member, Social and Behavioral Sciences Promotion and Tenure Committee of the College of Arts and Sciences; Member, Graduate Appointments Committee, Social Science Division, College of Arts and Sciences; Lunchtime Seminar Coordinator, Center for Archaeological Sciences.
1992-93  Chairman, Social and Behavioral Sciences Promotion and Tenure Committee of the College of Arts and Sciences; Member, University Council; Member, Graduate School Committee to Study Research Grading Policy; Lunchtime Seminar Coordinator, Center for Archaeological Sciences.

1993-95  Member, University Council.

1994-95  Member, Department of Anthropology Program Review Committee.


1995-97  Chair Elect, Regents Academic Advisory Committee on Geological Sciences and Geography.

1997-98  Chair, Regents Academic Advisory Committee on Geological Sciences and Geography.

1998-99  Member, University Council

1999-00  Member, University Environmental Programs Enhancement Committee; Member, Program Review Committee, Center for Latin American and Caribbean Studies.

2002-05  Member, Franklin College Social and Behavioral Sciences Promotion and Tenure Committee.

2003-04  Co-Chair, Franklin College Anthropology Program Review Committee. Member, Research Foundation Committee reviewing Director, Center for Applied Isotope Studies.

2007  Member of Franklin College Ad Hoc Geology Program Review Committee.

2010-11  Member of Franklin College Committee to select Franklin College nominees for Regents, University, and Distinguished Research Professorships.

3. **International**

2006  Reviewed promotion dossier for the College of Humanities and Social Sciences, United Arab Emirates University, December, 2006.