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Education

B.A. (Geography), State University of New York at Buffalo, 1965-1968
M. A. (Geography), University of Cincinnati, 1968-1971
Ph. D. (Geography, with minor in computer science) State University of New York at Buffalo 1974-1977

Professional Experience

February 1971 - September 1974
Senior Planner, Department of Planning and Development, City of Niagara Falls, NY
September 1974 - December 1975
Research Assistant, Department of Geography, State University of New York at Buffalo
January 1976 - August 1976
Research Associate, International Geographical Union, Commission on Geographical Data Sensing and Processing
September 1976 - August 1978
Clinical Lecturer, Department of Geography, State University of New York at Buffalo
September 1978 - August 1979
Clinical Assistant Professor, Department of Geography, State University of New York at Buffalo
April 1979 - September 1979
W.A.E. Scientist, RALI Program, U. S. Geological Survey (Reston, Virginia)
September 1979 - October 1979
Research Assistant Professor, State University of New York at Buffalo
October 1979 - June 1982
Geographer, Earth Resources Observation Systems Office, U. S. Geological Survey (Reston, Virginia)
July 1982 - December 1985
Research Assistant Professor, University of California at Santa Barbara
January 1986 - June 1995
Associate Professor, The Pennsylvania State University
October 1992 - February 1993
Visiting Associate, CSIRO Divisions of Information Technology and Water Resources (Canberra, Australia)
July 1995 – present
Professor, The Pennsylvania State University
January 2000 - May 2000
Visiting Associate, International Institute for Geo-Information Science and Earth Observation (ITC), Department of Geo-information Processing (Enschede, Netherlands)

January 2009-May 2009

Visiting Scholar, School of Geographical Sciences and Urban Planning, The Arizona State University (Tempe, Arizona)

July 2010 – June 2013

E. Willard Miller Professor of Human Geography, The Pennsylvania State University

Recent Honors and Awards

Awarded Guggenheim Fellowship, July 2000 - July 2001. The fellowship project was entitled; "A Cognitive Approach to Representing Geographic Knowledge."

Gave the 2003-2004 Arthur Robinson Colloquium, The Ohio State University. This is an annual three-day event focusing on spatial analytic methods, where a number of events are scheduled over the period in addition to the colloquium address focusing on the invitee's research area.

Recipient of the College of Earth and Mineral Sciences Wilson Award for Excellence in Research, April 2008.

Named the E. Willard Miller Professor of Human Geography, July 2010.

Recipient of the AAG GIScience Specialty Group 2011 Robert T. Aangeenbrug Distinguished Career Award.

Recipient of the NGA Best Presentation Award at the Academic Research Program Symposium and Workshops, September 2013

Named Fellow of the University Consortium for Geographic Information Science, May 2016.

Invited Talks

Invited speaker, NATO Advanced Study Institute on Map Data Processing, Maratea, Italy, June 1979.

Invited lecture series, *Algorithms and Data Structures for Geographic Information Systems*, a week-long event under sponsorship of the United Nations at the Tata Institute for Advanced Research, Bombay, India, November 1985.

Invited speaker, International Workshop on Geographic Information Systems, Beijing, China, June 1987.

Invited speaker, Brazil Symposium on Geoprocessing, Sao Paulo, Brazil, 1990.

Invited speaker, Study Group on Regional and Global Economic Integration Development Planning, and Information Technology, held in conjunction with the United Nations Centre for Regional Development Twentieth Anniversary General Conference, Nagoya, Japan, 1991.

Invited talk, *New directions in Spatial Database Models*, The Australian Defence Force Academy, Canberra, Australia, January 1993.

Closing keynote address, Advanced Geographic Data Modelling Symposium, Delft, Holland, September 1994.

Invited speaker, *New Directions for Spatial Representation*, Conference on Women & Science: Celebrating Achievements, Charting Challenges, National Science Foundation, Washington D.C., December 1995.

Invited talk, *The Representation and Analysis of Space-Time Phenomena in Geographic Information Systems*, Population Research Institute, Penn State University, July 1996.

- Invited talk, *Data Models for Large-Scale Geographic Information Systems*, Department of Computer Science and Engineering, Penn State University, September, 1996.
- Invited presentation and demonstration, *The TEMPEST Temporal Geographic Information System*, Earth System Science Center, Penn State University, February 1997.
- Invited member, closing panel of COSIT'97 (Conference on Spatial Information Theory), Hidden Valley, PA, October 1997.
- Keynote address, *The Importance of Metadata*, The Spatial Data Standards Summit, sponsored by the Federal Geographic Data Committee and the Pennsylvania Mapping and Geographic Information Consortium (PaMagic), Penn State Conference Center, October, 1997.
- Invited speaker, *Cognitive Models of Dynamic Phenomena and their Representations*, The Varenius Workshop on Cognitive Models of Dynamic Phenomena, Pittsburgh, October, 1998.
- Invited talk, *A Conceptual Approach for Modeling Complex and Dynamic Phenomena in GIS*, Center for Mapping, Ohio State University, February 1999.
- Invited speaker, *Time, GIS and Human Health; Representation of Space-time Dynamics*, Fourth Workshop on Health and Environment; Health Research Methods and Data, Turku, Finland, July 1999.
- Keynote address, *Making Space for Time: Issues in Space-Time Data Representation*, Tenth International DEXA Conference and Workshop on Database and Expert Systems Applications, Florence, Italy, August 1999.
- Invited talk, *Issues in Space-Time Data Representation*, Wageningen University, Centre for Geo-Information, Wageningen, The Netherlands, October 1999.
- Invited talk, *Data Models for Space-Time Representation in GIS*, Institute for Geoinformatics, Westphalian-Wilhelms University, Münster, Germany, May 2000.
- Invited talk, *Making Space for Time: Issues in Space-Time Data Representation*, Faculty of Geodetic Engineering, Delft University of Technology, Delft, The Netherlands, May 2000.
- Invited talk, *Cognitive Models for Geographic Representation*, International Institute for Aerospace Survey and Earth Science (ITC), Enschede, The Netherlands, May 2000.
- Invited speaker, *Time in GIS: an Overview*, Time in GIS: Issues in Spatio-Temporal Data Modeling, seminar sponsored by the Netherlands Geodetic Commission, Apeldoorn, The Netherlands, May 2000.
- The following were given as a series of invited lectures at the Institute of Geodesy and Cartography, Helsinki University of Technology, Helsinki, Finland, during a week-long visit between Sept. 04 and Sept 08, 2000:
- Issues in Space-Time Data Representation*
The Pyramid Model: A Conceptual Framework for Representing Complex and Dynamic Phenomena in GIS
Creative Thinking & Knowledge Discovery Using Geographic Visualization
- Invited talk, *Biding our time?* presented at the Workshop on Spatio-Temporal Data Models for Biogeophysical Fields, sponsored by NSF, San Diego, February 2002.
- Invited member, *Computing skills needed by GIScience students in the coming years*, panel on

- UCGIS standard curricula for GIScience, AAG annual meeting, Los Angeles, March 2002.
- Invited talk, *A New Approach for Analysis of Complex Space-Time Processes*, Department of Geography, The Arizona State University, April 2004
- Invited talk, *Analysis of Complex Space-Time Processes: The Next-Generation GIS*, Department of Geography, The University of Maryland, April 2004.
- Presentation of the annual Robinson Lecture - Invited talk, *A New Approach for Analysis of Complex Space-Time Processes*, Department of Geography, The Ohio State University, May 2004.
- Invited talk, *Integrated Database and Visualization Environments for Space-Time Information Exploration*, Temple University, Department of Geography and Urban Studies, March 2005.
- Keynote address, *Time for Change: An Integrated Environment for Representation and Analysis of Complex Space-Time Processes*, 15th Annual Fall Workshop on Computational Geometry and Visualization, Philadelphia, November 2005.
- Invited talk, *Seeing Events in all their Complexity: Temporal GIS and the Representation of Space-Time Data*, The Computer: The Once and Future Medium for the Humanities and Social Sciences Symposium, 2006 Canadian Congress Social Sciences and Humanities, Toronto, May 2006
- Invited talk, *Time, and Time Again*, Workshop on Computation and Visualization for the Understanding of Dynamics in Geospatial Domains, University Consortium for Geographic Information Science (UCGIS), Baltimore, MD, October 2006.
- Invited talk, *Time for Change: Representation and Analysis of Space-Time Processes*, The Quantitative Social Science Initiative (QuaSSI) Speaker Series, Dept. of Political Science, Penn State, November 2006.
- Invited talk, *The Multi-Representation of Space-Time Data*, International Conference on Historical Maps and GIS, Nagoya, Japan, August 2007.
- Keynote address, *The Multi-Representation of Space-Time Information: Toward Integrated Space-Time Analysis Environments*, International Conference on Virtual Geographic Environments, Hong Kong, January 2008.
- Discussant, Organized session “Dynamic GIS” – commentary on four research papers presented at the session. Commentary was entitled *Understanding Dynamics*, AAG Annual Meeting, Boston, MA, April 2008
- Invited talk, *Tools for e-Thinking: Learning and Decision-Making in a Petabyte World*, Speaker Series, School of Geographical Sciences and Urban Planning, Arizona State University, February 2009.
- Invited talk, *A Method for Discovery and Analysis of Temporal Patterns in Complex Space-Time Event Data*, Speaker Series, École Polytechnique Federale de Lausanne, Switzerland, May, 2012.
- Invited talk, *STempo: An Integrated Visualization and Statistical Environment for Discovery and Analysis of Pattern in Complex Space-Time Event Data*, Speaker Series, Department of Geography, University of Zurich, Switzerland, May, 2012.
- Invited talk, *STempo: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Pattern in Complex Space-Time Event Data*, National Geospatial Intelligence Agency Academic

Research Program (NARP) Symposium, Washington, D.C., August, 2012.

Invited panel participant, *Emerging Challenges (and Opportunities) to Contribute to the Geospatial Revolution & Big Data*, panel on Space-Time Research in GIScience, Seventh International Conference on Geographic Information Science (GIScience 2012), Columbus, OH, September, 2012.

Conference presentation, *A Method for Discovery and Analysis of Temporal Patterns in Complex Space-Time Event Data*, Seventh International Conference on Geographic Information Science (GIScience 2012), Columbus, OH, September, 2012.

Invited talk, *STempo Advances: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Pattern in Complex Space-Time Event Data*, National Geospatial Intelligence Agency Academic Research Program (NARP) Symposium, Washington, D.C., September, 2013. – voted best presentation of conference.

Invited ‘success story’ talk, *STempo: An Integrated Statistical and Visualization Environment for Discovery and Analysis of Pattern in Complex Space-Time Event Data*, National Geospatial Intelligence Agency Academic Research Program (NARP) Symposium, Washington, D.C., September, 2014.

Invited talk, *STempo: An Interactive Visualization and Statistical Environment for Discovery and Analysis of Space-Time Patterns*, National Geospatial Intelligence Agency Academic Research Program (NARP) Symposium, Washington, D.C., September, 2015.

Professional Service

Professional Organizations

Association of American Geographers

- Treasurer, Special Interest group on Geographic Information Systems 1988-1989.
- Chair, Special Interest group on Geographic Information Systems 1991-1992 (Vice-Chair in 1990-1991)
- Member, 1993 National Nominating Committee
- Member, National Committee on Digital Data Formats and Standards, 1993- 1998
- Editorial Advisory Committee of *Resource Publications for College Geography*, 1987-1992 and 1995-2000
- Member, Program Committee for Annual Meeting, Philadelphia, March, 2004
- Member, Selection Committee, Garrison Award for Best Dissertation in Computational Geography, 2008 – present.

University Consortium for Geographic Information and Analysis

- Lead Penn State voting representative, 1995-present (one of two PSU representatives)
- Member, Board of Directors, 1996-1998 and 2007-2008
- Member, Research Committee, 1996-1999
- Lead person on defining UCGIS Research Initiative on Extensions to Geographic Representation, 1996-1999
- Member, Education Committee, 1998-1999
- Member, Model Curricula Steering Committee, 1999-2004

American Cartographic Association

- Member, Board of Directors, 1994-1996

American Congress on Surveying and Mapping

- Vice Chair, Working Group on Data Organization of the National Committee for Digital Cartographic Data Standards, 1983-1985

Editorial Boards

Series editor, *Technical Issues in Geographic Information Systems*, Taylor & Francis, Ltd., 1990-1994.

Member, Editorial Board, Geographer's Resource Publications in Geography Series, Association of American Geographers, 1995-1997.

Member, Editorial Board, International Journal of Geographical Information Science, 1986 - present.

Member, Editorial Advisory Board, ISPRS Journal of Photogrammetry and Remote Sensing, Elsevier, 2000 - 2004.

International Activities

U.S. Member, Commission on Geographical Data Sensing and Processing, International Geographical Union, 1980-1985.

Co-organizer, United States/Australia Workshop on Design and Implementation of Computer-Based Geographic Information Systems, June 1982.

Program Chair, First International Symposium on Spatial Data Handling, Zurich, Switzerland 1984.

Executive Secretary, Commission on Geographical Data Sensing and Processing, International Geographical Union, 1985-1988.

Member, Program Committee, Seventh International Conference on Spatial Data Handling, International Geographical Union, Delft, The Netherlands, August, 1996.

Member, Program Committee, Eighth International Conference on Spatial Data Handling, International Geographical Union, Vancouver, July, 1998.

Member, Program Committee, International Conference on Spatial Information Theory (COSIT'99), Hamburg, Germany, August, 1999.

Member, Program Committee, Eleventh International Conference on Spatial Data Handling, International Geographical Union, Ottawa, July, 2002.

Member, Program Committee, Twelfth International Conference on Spatial Data Handling, International Geographical Union, Leicester, United Kingdom, August, 2004.

Member, Scientific Committee of the Twelfth International Symposium on Spatial Data Handling (SDH 06), International Geographical Union, Vienna, 2006.

Member, Program Committee, Fourth International Conference on Geographic Information Science (GIScience 2006), September, 2006

Chair, Working Group on Spatio-Temporal Modeling, International Society for Photogrammetry and Remote Sensing (ISPRS) Technical Commission II: Theory and Concepts of Spatio-Temporal Data Handling and Information, 2004-2006.

Member, Scientific Committee of the Thirteenth International Symposium on Spatial Data Handling (SDH 08), International Geographical Union, Montpellier, France, 2008.

U.S. Activities

Participant, invited forum to review the U.S. Global Change Data and Information Management Implementation Plan, National Academy of Sciences, September 1993.

Member, External Advisory Board, Breast Cancer Study, Epidemiology Program, Brookhaven National Laboratories, N.Y. 1995.

Director, Auto Carto 12 Conference, held in conjunction with American Congress on Surveying and Mapping/ American Society for Photogrammetry and Remote Sensing, Charlotte, North Carolina, 1995.

Member, NSF Site Review Panel for renewal of the National Center for Geographic Information and Analysis (NCGIA) at The University of California at Santa Barbara, April 1996.

Member, Advisory Panel on Computational Implementations of Geographic Concepts, NSF-sponsored project on Advancing Geographic Information Science (Varenius) to the National Center for Geographic Information and Analysis, 1997-1999.

Co-organizer (with Dr. Barry Smith, Philosophy, SUNY Buffalo) of an interdisciplinary workshop on The Ontology of Fields, sponsored by the National Consortium for Geographic Information and Analysis, Bar Harbor, June 1998.

Member, National Science Foundation review panel to evaluate Knowledge and Distributed Intelligence Center proposals, July 1998.

Invited participant at Workshop on Geographic Information Science and Geospatial Activities at the National Science Foundation, January, 1999. Purpose of this workshop was to critically examine the relationship of Geographic Information Science to existing programs and initiatives at NSF and to examine prospects for new NSF initiatives.

Reviewer for draft: *Navigating the Geospatial Future*, report by the Committee on Intersections between Geospatial Information and Information Technology, National Academy of Sciences, 2002.

Member, external review panel for evaluating the Geography program at the University of Maryland, College Park, 2004.

Invited participant at Workshop on Agent-Based Modeling of Complex Spatial Systems, jointly sponsored by NSF and the UK Economic and Social Research Council, Santa Barbara, April 2007.

Invited participant at Promoting Digital Scholarship: Formulating Research Challenges In the Humanities, Social Sciences and Computation, a workshop Co-Sponsored with the National Endowment for the Humanities by the Council on Library and Information Resources, Washington, D.C., September 2008, and follow-on workshop in January 2010.

Member, external review panel for evaluating the joint San Diego State University & University of California at Santa Barbara joint PhD program in Geography, 2012.

Consulting Activities

Altek Corporation
Environment Canada
National Capital Commission (Canada)

Professional Publications

Books and Monographs

Tomlinson, Roger, Duane Marble, Kurt Brassel, Donna Peuquet and Carl Reed. *Computer Software for Spatial Data Handling*, 756 pp. Ottawa: International Geographical Union, Commission on Geographical Data Sensing and Processing (1976).

Peuquet, Donna J. *Computer Software for Spatial Data Handling (2nd ed) Volume 2: Data Manipulation Programs*, 302 pp. Ottawa: International Geographical Union, Commission on Geographical Data Sensing and Processing (1980).

Peuquet, Donna J. and John O'Callaghan (eds). *The Design and Implementation of Computer-Based Geographic Information Systems*. Amherst, NY: International Geographical Union Commission on Spatial Data Sensing and Processing, 146 pp. (1982).

Peuquet, Donna J. and A. Raymond Boyle. *Raster Scanning Plotting and Processing of Cartographic Documents*, 122 pp. Williamsville, NY: SPAD Systems, Ltd. (1984).

Marble, Duane F., Hugh W. Calkins and Donna J. Peuquet (eds). *Basic Readings in Geographic Information Systems*. Williamsville, NY: SPAD Systems, Ltd, 232 pp. (1984).

Peuquet, Donna J. and Duane F. Marble (eds). *Introductory Readings in Geographic Information Systems*, London: Taylor & Francis, Ltd., 377pp. (1990).

Peuquet, Donna J. *Representations of Space and Time*, New York: Guilford, (2002).

Contributions to Books

Peuquet, Donna J., Duane F. Marble and Hugh W. Calkins. "Information System Support of Regional Environmental Analysis," pp. 77-107 in *Regional Environmental Analysis*, B. Mar (ed), Seattle, WA: University of Washington (1977).

Peuquet, Donna J. "Raster Data Handling in Geographic Information Systems," pp. 68-76 in *Harvard Papers on Geographic Information Systems*, Vol. 2, J. Dutton (ed), Reading, MA: Addison-Wesley (1978).

Peuquet, Donna J. and Duane F. Marble. "Problems in the Storage and Manipulation of Large Spatial Data Sets," pp. 61-69 in *Computer Mapping for Resource Analysis*, J. C. Davis and S. L. de Lopez (eds.), Lawrence, KS: Kansas Geological Survey (1979).

Peuquet, Donna J. "Comparative Data Structures: Raster vs. Vector," pp. 73-80 in *Computer Assisted Cartography and Geographical Information Processing: Hope and Realism*, D. Douglas and A.R. Boyle (eds), Ottawa: Canadian Cartographic Association (1982).

Marble, Duane F. and Donna J. Peuquet. "Geographic Information Systems," pp. 923-957 (Chapter 22) in *Manual of Remote Sensing* (revised edition). R. Colwell, D. Simonett, J. Estes, (eds), Falls Church, VA: American Society of Photogrammetry (1983).

Peuquet, Donna J. "Issues Involved in Selecting Appropriate Data Models for Global Databases," pp. 66-78 in *Building Databases for Global Science*, H. Mounsey and R. Tomlinson (eds), London: Taylor & Francis (1988).

Peuquet, Donna J. "Methods for Structuring Digital Cartographic Data in a Personal Computer Environment." pp. 67-95 (Chap. 4) in *The Microcomputer in Contemporary Cartography*, D.R. Fraser Taylor, (ed), Chichester: John Wiley & Sons (1991).

Peuquet, Donna J., Richard Davis and Susan Cuddy, "Geographic Information Systems for Modelling Environmental Change," pp. 543-556 (Chap. 23) in *Modelling Change in Environmental Systems*, A.J. Jakeman (ed.), New York: Wiley (1993).

Peuquet, Donna J. and Liujin Qian "An Integrated Database Design for Temporal GIS," , pp. 21-31 in *Advances in GIS Research II: Proceedings, Seventh International Symposium on Spatial Data Handling*, Kraak and Molenaar (eds.), London: Taylor & Francis (1997).

- Peuquet, Donna J. "Time in GIS and Geographical Databases" pp. 91-103 in *Geographical Information Systems: Principles and Applications*, Maguire, Goodchild, Rhind, and Longley (eds.), 2nd edition, New York: John Wiley & Sons (1999).
- Yuan, M., D. Mark, M. Egenhofer, D. Peuquet, "Extensions to Geographic Representations." pp. 129-156 in *Research Challenges in Geographic Information Science.*, R. McMaster (ed.), New York: John Wiley & Sons (2004).
- Peuquet, D. J. (with others), "Data Representation and Transformation," Chap. 4, pp. 105-136 in *Illuminating the Path: The Research and Development Agenda for Visual Analytics*, J. Thomas and K. Cook (eds.) produced by the National Visualization and Analytics Center, Los Alamitos, CA: IEEE Computer Society Press (2005).
- Peuquet, Donna J. "Space-Time Representations," in *Encyclopedia of Human Geography*, Barney Warf (ed.), Thousand Oaks; CA: Sage Publications (2006).
- Peuquet, Donna J., "Toward Integrated Space-Time Analysis Environments," Chapter 4, pp. 37-48 in *Virtual Geographical Environments*, Hui Lin and Michael Batty (eds.), Beijing; Science Press (2009).
- Peuquet, Donna J., "Data Structures and the Storage and Retrieval of Spatial Data," Chapter 6 in: *The History of Cartography, Cartography in the Twentieth Century (Volume 6)*, Mark Monmonier (ed.), Chicago: University of Chicago Press (2015).

Contributions to Refereed Symposium Volumes

- Marble, Duane F. and Donna J. Peuquet. "Computer Software for Spatial Data Handling: Current Status and Future Development Needs," pp. 83-91 in *Proceedings*, Moscow Meeting of the International Geographical Union Commission on Geographical Data Sensing and Processing, Moscow (1976).
- Peuquet, Donna J. "The Need for Raster-Mode Processing of Cartographic Data," pp. 139-147 in *Proceedings*, Third International Conference on Automation in Cartography, San Francisco (1978).
- Peuquet, Donna J. "Current Problems in Cartographic Data Storage and Retrieval," p.620 in *Proceedings*, Institute of Electrical and Electronics Engineers Conference on Pattern Recognition and Image Processing, Dallas (1981).
- Peuquet, Donna J. "Vector/Raster Options for Digital Cartographic Data," pp. 29-35 in *Proceedings*, U.S./Australia Workshop on the Design and Implementation of Geographic Information Systems, Honolulu (1983).
- Peuquet, Donna J. "Data Structures for a Knowledge-Based Geographic Information System," pp. 372-391 in *Proceedings*, International Geographical Union International Symposium on Spatial Data Handling, Zurich (1984).
- Zi-Tan Chen and Donna J. Peuquet. "Quadtree Spatial Spectra Guide: A Fast Spatial Heuristic Search in a Large Geographic Information System," pp. 223-229 in *Proceedings*, American Society of Photogrammetry/American Congress on Surveying and Mapping National Spring Conference, Washington, DC (1985).
- Smith, Terrence R. and Donna J. Peuquet. "Control of Spatial Search for Complex Queries in a Knowledge Based Geographic Information System," pp. 1-11 in *Proceedings*, International Conference on Advanced Techniques for Monitoring and Processing Environmental Data, London (1985).

- Peuquet, Donna J. "The Use of Spatial Relationships to Aid Spatial Database Retrieval," pp. 459-471 in *Proceedings*, Second International Symposium on Spatial Data Handling, Seattle (1986).
- Peuquet, Donna J. "Data Models for Very Large Geographic Databases," pp. 149-162 in *Proceedings*, International Workshop on Geographic Information Systems, Beijing (1987).
- Peuquet, Donna J. "Toward an Integrated Approach for Designing Geographic Databases," pp. 428-450 in *Proceedings*, I Conferencia Latino Americana Sobre Informatica en Geografia, San Jose, Costa Rica (1987).
- Peuquet, Donna J. "Research Issues in Artificial Intelligence and Geographic Information Systems," pp. in *Proceedings*, Geographic Information Systems Symposium, Washington, DC (1987).
- Peuquet, Donna J. "Toward the Definition and Use of Complex Spatial Relationships," pp. 211-223 in *Proceedings*, Third International Symposium on Spatial Data Handling, Sydney (1988).
- Peuquet, Donna J. "The Use of Artificial Intelligence Techniques in Geoprocessing Applications: Hope and Realism," pp. 65-76 in *Proceedings*, Geoprocessamento, Sao Paulo, Brazil (1990).
- Peuquet, Donna J. "An Overview of the Application of Artificial Intelligence Approaches for Geographic Information Systems," in *Proceedings*, Seventh International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography and Hydrology, New Orleans (1991).
- Peuquet, Donna J., Robert J. Laacke and Carl N. Skinner "Representational Issues Involved in the Development of a Decision Support System for Spatial and Temporal Analysis of Forest Ecosystems," pp. 381-387 in *Proceedings*, American Society of Photogrammetry and Remote Sensing/American Congress of Surveying and Mapping, Washington, D.C. (1992).
- Peuquet, Donna J. "The Incorporation of Organizational Considerations in the GIS Design Process," pp. 157-170 in *Geographic Information Systems in Regional Development Planning: Proceedings of the Study Group Meeting on Regional and Global Economic Integration, Development Planning and Information Technology*, United Nations Centre for Regional Development, Nagoya, Japan (1992).
- Peuquet, Donna J. "What, Where and When - A Conceptual Basis for Design of Spatiotemporal Databases," *Proceedings*, Workshop on Advances in Geographic Information Systems, in conjunction with Conference on Information and Knowledge Management, Association for Computing Machinery, Washington, D.C. (1993).
- Peuquet, Donna J. and Elizabeth Wentz "An Approach for Time-based Analysis of Spatiotemporal Data," *Proceedings*, Sixth International Symposium on Spatial Data Handling, Edinburgh, Scotland (1994).
- Peuquet, Donna J. and Liujin Qian "An Integrated Database Design for Temporal GIS," *Proceedings*, Seventh International Symposium on Spatial Data Handling, Delft, Holland, pp. 2-1 to 2-11. (1996) (Also separately published by Taylor & Francis, (1997).
- Edsall, Robert and Donna Peuquet "A Graphical User Interface for the Integration of Time into GIS," *Proceedings*, Annual ACSM/ASPRS Convention, Seattle, pp. 182-189 (1997).
- Qian, Liujian and Donna Peuquet "A Systematic Strategy for High Performance GIS," *Proceedings*, *Auto-Carto 13*, Seattle, pp. 145-154 (1997).

- Qian, Lijuan, Monica Wachowicz, Donna Peuquet and Alan MacEachren “Delineating Operations for Visualization and Analysis of Space-Time Data in GIS,” *Proceedings, GIS/LIS, Cincinnati*, pp. 872-878 (1997).
- Edsall, Robert M., Menno-Jan Kraak, Alan MacEachren and Donna J. Peuquet “Assessing the Effectiveness of Temporal Legends in Environmental Visualization,” *Proceedings, GIS/LIS '97, Cincinnati*, pp. 677-685 (1997).
- Wachowicz, Monica, Donna Peuquet and Alan MacEachren, “Integrating Data Mining and GVis for Exploring Spatio-temporal Data,” *GIS Research UK, Edinburgh* (1998).
- Qian, Lijuan and Donna Peuquet, “Design of a Visual Query Language for GIS” *Proceedings, Eighth International Symposium on Spatial Data Handling, Vancouver*, pp. 592-602 (1998).
- Peuquet, Donna J., “Making Space for Time: Issues in Space-Time Data Representation” *Proceedings, 10th Annual Workshop on Database and Expert Systems Applications (DEXA), Workshop 6 - Spatio-Temporal Data Models & Languages, Florence, Italy, IEEE Computer Society*. pp. 404-408 (1999).
- Peuquet, Donna J. and Diansheng Guo, “Mining Spatial Data using an Interactive Rule-Based Approach.” *Proceedings, GIScience 2000, Denver*, pp. 152-153 (2000).
- Guo, Diansheng, Donna Peuquet and Mark Gahegan, “Interactive Subspace Clustering for Mining High-Dimensional Spatial Patterns,” *Proceedings, Second International Conference on Geographic Information Science (GIScience), Boulder, Colorado*, pp. 60-63 (2002).
- Guo, Diansheng, Donna Peuquet and Mark Gahegan. “Opening the Black Box: Interactive Hierarchical Clustering for Multivariate Spatial Patterns,” *Proceedings, ACM-GIS (2002)* (selected as one of the four best papers of the meeting).
- Guo, Diansheng, Mark Gahegan, Donna Peuquet and Alan MacEachren. “Breaking Down Dimensionality: An Effective Feature Selection Method for High-Dimensional Clustering,” *Proceedings, SIAM (Society for Industrial and Applied Mathematics) Workshop on Clustering High Dimensional Data and its Applications, the Third SIAM International Conference on Data Mining, San Francisco* (2003).
- Guo, D., Gahegan, M., MacEachren, A. and Peuquet, D., 2003. Discovering Knowledge from High-Dimensional Geographic Data: Integrating Visual and Computational Approaches. University Consortium on Geographical Information Science, Annual Meeting, White paper.
- Dou, Jianwei. and Donna Peuquet. “Flexible Indexing of Spatiotemporal Information with Multiple Views,” *Proceedings, Geocomputation, Ann Arbor* (2005).
- Liao, D., Peuquet, D.J., Duan, Y., Whitsel, E.A.; Dou, J., Smith, L., Lin, H., Heiss, G., “GIS approaches for estimation of residential-level ambient PM concentrations.” *Proceedings, International Society of Environmental Epidemiology R, Johannesburg, South Africa* (2005).
- Whitsel EA, Liao D, Prineas RJ, Peuquet DJ, Quibrea PM, Catellier DJ, Heiss G, Smith RL, “Heart Rate Variability, Ambient Particulate Matter, and Socioeconomic Context: The Environmental Epidemiology of Arrhythmogenesis of the Women’s Health Initiative.” *Proceedings, 46th Annual Conference on Cardiovascular Disease Epidemiology and Prevention. Phoenix* (2006).

- Weaver, Christopher, David Fyfe, Anthony Robinson, Deryck Holdsworth, Donna Peuquet and Alan M. MacEachren, "Visual Analysis of Historic Hotel Visitation Patterns," *Proceedings*, IEEE Symposium on Visual Analytics Science and Technology, Baltimore (2006).
- Agrawal, Ritesh and Donna Peuquet, "A Unified Task Taxonomy of Spatial Analytical and Visualization Operations", *Proceedings*, GIScience 2006, Munster (2006).
- Peuquet, Donna J., "Agent-Based Modeling of Complex Spatial Systems," *Proceedings*, International Workshop on Agent-Based Modeling of Complex Spatial Systems, Santa Barbara (2007).
- Peuquet, Donna J., "The Multi-Representation of Space-Time Data," *Proceedings*, Historical Maps and GIS, Nagoya (2007).
- Ken C. K. Lee, Wang-Chien Lee, Donna Peuquet, and Baihua Zheng. "Searching Correlated Objects in a Long Sequence" Scientific and Statistical Database Management (SSDBM), Lecture Notes in Computer Science (Heidelberg: Springer-Verlag) pp 436-454.
- Peuquet, Donna J. "The Multi-Representation of Space-Time Information: Toward Integrated Space-Time Analysis Environments," *Proceedings*, International Conference on Virtual Geographic Environments, January 7-8, 2008, Hong Kong.
- Peuquet, D., A method for discovery and analysis of temporal patterns in complex space-time data. In *Proceedings*, Seventh International Conference on Geographic Information Science (GIScience 2012), Columbus, OH, September, 2012.
- Robinson, A., F. Hardisty, S. Stehle and D. Peuquet, "Visualizing Event Sequences in Geographic Data with STempo." *Proceedings*, *Association of American Geographers Annual Meeting* (Los Angeles: AAG).
- Peuquet, Donna J. 2013. "STempo Advances: An Interactive Visualization and Statistical Environment for Discovery and Analysis of Space-Time Patterns." *Proceedings*, NGA Academic Research Program (NARP) Symposium and Workshops 2013, Washington, D.C.
- Peuquet, D., and S. Stehle, "Validation of Results for Temporal Patterns Derived in STempo." In *Proceedings*, Eighth International Conference on Geographic Information Science (GIScience 2014), Vienna, Austria, September, 2014.
- Swedberg, B, A. Robinson, F. Hardisty, D. Peuquet, "Geovisualization of Spatio-Temporal Events in STempo." In *Workshop on GeoVisual Analytics: Interactivity, Dynamics, and Scale in conjunction with Eighth International Conference on Geographic Information Science* (GIScience 2014), Vienna, Austria, September, 2014.

Refereed Journal Articles

- Peuquet, Donna J. "Raster Processing: An Alternative Approach to Automated Cartographic Data Handling." *The American Cartographer*, 6(2):129-139 (1979).
- Peuquet, Donna J. "A Raster-Mode Algorithm for Interactive Modification of Line-Drawing Data." *Computer Graphics and Image Processing* (currently, *Computer Vision, Graphics and Image Processing*), 10(2):142-158 (1979).
- Peuquet, Donna J. "An Examination of Techniques for Reformatting Digital Cartographic Data: I-The Raster-to-Vector Process." *Cartographica*, 18(1):34-48 (1981).

- Peuquet, Donna J. "An Examination of Techniques for Reformatting Digital Cartographic Data: II-The Vector-to-Raster Process." *Cartographica*, 18(3):21-33 (1981).
- Peuquet, Donna J. "A Hybrid Structure for the Storage and Manipulation of Very Large Spatial Data Sets." *Computer Graphics and Image Processing* (currently, *Computer Vision, Graphics and Image Processing*), 24:14-27 (1983).
- Duane F. Marble and Donna J. Peuquet. "The Computer and Geography: Some Methodological Comments." *Professional Geographer*, 35(3): 343-344 (1983).
- Peuquet, Donna J. "A Conceptual Framework and Comparison of Spatial Data Models." *Cartographica*, 21(4):66-113 (1984).
- Smith, Terrence R. and Donna J. Peuquet. "KBGISII: A Knowledge-Based Geographic Information System," (with Sudakar Menon and Penkaj Agarawal) *International Journal of Geographical Information Systems* (currently, *International Journal of Geographical Information Science*, 1(2):149-172 (1987).
- Peuquet, Donna J. review of *Education and Training in Contemporary Cartography*, by R.F. Taylor. *American Cartographer*, 14(1):177-178 (1987).
- Peuquet, Donna J. and Zhan Ci Xiang. "An Algorithm to Determine the Directional Relationship between Arbitrarily Shaped Polygons." *Pattern Recognition*, 20(1):65-74 (1987).
- Peuquet, Donna J. "Representations of Geographic Space: Toward a Conceptual Synthesis." *Annals of the Association of American Geographers*, 78(3):375-394 (1988).
- Peuquet, Donna J. review of *The Design and Analysis of Spatial Data Structures* by Hanan Samet. *Geographical Analysis*, 23(2):179-180 (1991).
- Peuquet, Donna J. and Todd Bacastow. "Organizational Issues in Establishing a GIS: A Case Study of U.S. Army Topographic Information Automation," *International Journal of Geographical Information Systems* (currently *International Journal of Geographical Information Science*, 5(3):303-319 (1991).
- Peuquet, Donna J. "An Algorithm for Calculating Minimum Distance Between Two Geographic Features," *Computers and Geosciences*, 18(8):989-1001 (1992).
- Marble, Duane and Donna J. Peuquet. "The Computer and Geography: Ten Years Later," *The Professional Geographer*, 45(4):446-448 (1993).
- Peuquet, Donna J. "It's About Time: A Conceptual Framework for the Representation of Temporal Dynamics in Geographic Information Systems," *Annals of the Association of American Geographers*, 84(3):441-461 (1994).
- Peuquet, Donna D. and Niu Duan. "An Event-Based Spatio-Temporal Data Model for Geographic Information Systems," *International Journal of Geographical Information Systems* (currently, *International Journal of Geographical Information Science*), 9(1):7-24 (1995).
- Egenhofer, M. J., J. Glasgow, O. Gunther, J. R. Herring and D. J. Peuquet. "Progress in Computational Methods for Representing Geographical Concepts." *International Journal of Geographical Information Science* 13(8): 775-796 (1999).

- Mennis, Jeremy and Donna J. Peuquet. "A Conceptual Framework for Incorporating Cognitive Principles into Geographical Database Representation." *International Journal of Geographical Information Science* 14(6): 501-520 (2000).
- Peuquet, Donna J. "Space-time representation: An overview." *Time in GIS: Issues in spatio-temporal modelling*. Netherlands Geodetic Commission Publications on Geodesy, 47: 3-12 (2000).
- Peuquet, Donna J. "Making Space for Time: Issues in Space-Time Representation," *Geoinformatica*, 5(1): 11-32 (2001).
- Peuquet, Donna J. and Menno-Jan Kraak. "Geobrowsing: Creative Thinking & Knowledge Discovery: Using Geographic Visualization," *Information Visualization* 1(1): 80-91 (2002) .
- Guo, Diansheng, Donna Peuquet and Mark Gahegan. "ICEAGE: Interactive Clustering and Exploration of Large and High-dimensional Geodata," *GeoInformatica* 7(3): 229-253 (2003).
- Mennis, Jeremy and Donna Peuquet. "The Role of Knowledge Representation in Geographic Knowledge Discovery: A Case Study," *Transactions on GIS* 7(3): 371-391 (2003) .
- Peuquet, Donna J. (Ed.), *International Society for Photogrammetry and Remote Sensing Journal*, special section on Advances in Spatio-Temporal Analysis and Representation 60(1): 1- 47 (2005)
- Peuquet, Donna J., "Advances in Spatio-Temporal Analysis and Representation: Editorial," *International Society for Photogrammetry and Remote Sensing Journal*, special section on Advances in Spatio-Temporal Analysis and Representation 60(1): 1-2 (2005).
- Liao, D., D.J. Peuquet, Y. Duan, E. Whitsel, J. Dou, R.L. Smith, R.L., H Lin, J.C. Jiu-Chiuan and G. Heiss. "GIS Approaches for the Estimation of Residential-Level Ambient PM Concentrations," *Environmental Health Perspectives*. 114(9): 1374-1380 (2006).
- Weaver, Christopher, David Fyfe, Anthony Robinson, Deryck Holdsworth, Donna Peuquet, and Alan M. MacEachren. "Visual Analysis of Historic Hotel Visitation Patterns," *Information Visualization* (Special Issue on Visual Analytics), 6(1): 89-103 (2007).
- Duanping Liao, Donna J. Peuquet, Hung-Mo Lin, Yinkang Duan, Eric A. Whitsel, Richard L. Smith, Gerardo Heiss. "National Kriging Exposure Estimation," *Environmental Health Perspectives* 115(7): A338-A339 (2007).
- Yu, Chaoqing and Donna J. Peuquet. "A GeoAgent-based Framework for Knowledge-oriented Representation: Embracing Social Rules in GIS," *International Journal of Geographical Information Science*. 23(7): 923-960 (2009).
- Yu, Chaoqing, Alan M. MacEachren, Donna J. Peuquet, and Brent Yarnal, "Integrating scientific modeling and supporting dynamic hazard management with a GeoAgent-based representation of human-environment interactions: a drought example in Central Pennsylvania, USA" *Environmental Modelling & Software*, 24:12, pp. 1501-1512 (2009).
- Duanping Liao, Eric A. Whitsel, Yinkang Duan, Hung-Mo Lin, P. Miguel Quibrera, Richard Smith, Donna J. Peuquet, Ronald J. Prineas, Zhu-Ming Zhang, Garnet Anderson "Ambient particulate air pollution and ectopy: – The Environmental Epidemiology of

Arrhythmogenesis in WHI (EEAWHI), 1999-2004” *Journal of Toxicology and Environmental Health Part A*. 72(1): 30-38 (2009).

Jin Chen, Alan MacEachren, and Donna J. Peuquet “Constructing a concise dendrogram overview” *IEEE Transactions on Visualization and Computer Graphics*, 15:6, pp. 889-896 (2009).

Wentz, Elizabeth A., Donna J. Peuquet and Sharolyn Anderson, “An ensemble approach to space-time interpolation,” *International Journal of Geographical Information Science*. 24(9): 1309-1325 (2010).

Stehle, Samuel and Donna Peuquet “Analyzing spatio-temporal patterns and their evolution via sequence alignment.” *Spatial Cognition and Computation*, 15(2), pp. 68-85 (2015).

Peuquet, D.J., Robinson, A.C., Stehle, S., Hardisty, F.A. and Luo, W. “A method for discovery and analysis of temporal patterns in complex event data.” *International Journal of Geographical Information Science*, 29(9), pp. 1588-1611(2015).

Robinson, A.C., Peuquet, D.J., Pezanowski, S., Hardisty, F.A. and Swedberg, B. “Design and evaluation of a geovisual analytics system for uncovering spatio-temporal patterns in event data.” *Cartography and Geographical Information Science*. 44(3), pp. 216-228 (2017)

Swedberg, B. and Peuquet, D.J. “An evaluation of a visual analytics prototype for calendar related spatiotemporal periodicity detection and analysis.” *Cartographica*, 52(1), pp. 63-79 (2017).

Swedberg, B. and Peuquet, D.J. (in preparation) “PerSE: Visual analytics for calendar related spatiotemporal periodicity detection and analysis.” *Geoinformatica*, 21(3), pp. 577-597 (2017).

Technical Reports

Duane F. Marble and Donna J. Peuquet. *The Domestic Information Display System: Some Development Potentials*, 25 pp. Technical report to Resource and Land Investigations Program, U.S. Geological Survey, 1979.

Peuquet, Donna J. and D.F. Marble. *Cartographic Data Structure Conversions: Raster-to-Vector and Vector-to-Raster*, 92 pp. Technical report to the U.S. Air Force Systems Command and Defense Mapping Agency, 1979.

Peuquet, Donna J. *A Hybrid Structure for the Storage and Manipulation of Very Large Spatial Data Sets*, 36 pp. Open File Report 82-816. U.S. Geological Survey, Reston, VA, 1982.

Smith, T. and Donna J. Peuquet. *First Interim Report on Knowledge Based Engineering for Database Management and Use*, 47 pp. Technical report to the U.S. Geological Survey, 1984.

Estes, J., D. Botkin, D. Peuquet, T. Smith, J. Star. *Remote Sensing Information Sciences Research Group -- Final Report, Year 1*, 129 pp. Technical report to NASA, 1984.

Peuquet, Donna J. and T. Smith. *Second Interim Report on Knowledge Based Engineering for Database Management and Use*, 102 pp. Technical report to the U.S. Geological Survey, 1985.

Estes, J., D. Botkin, D. Peuquet, T. Smith, J. Star. *Remote Sensing Information Sciences Research Group--Final Report, Year 2*, 151 pp. Technical report to NASA, 1985.

Peuquet, Donna J. *Advanced Data Structures for the Interpretation of Image and Cartographic*

- Data in Geo-Based Information Systems*, 81 pp. Technical Report to NASA Goddard Space Flight Center, 1985.
- Peuquet, Donna J. *Advanced Data Structures for the Interpretation of Image and Cartographic Data in Geo-Based Systems*, 35 pp. Final report, phase III, to NASA Goddard Space Flight Center, 1986.
- Peuquet, Donna J. *Advanced Techniques for the Storage and Use of Heterogeneous Spatial Databases*, 61 pp. Mid-Year Report, phase I, to NASA Goddard Space Flight Center, 1987.
- Peuquet, Donna J. *Knowledge Based Engineering for the Definition and Codification of Spatial Objects*, 17 pp. Final Report to Digital Equipment Corporation, 1987.
- Peuquet, Donna J. *Advanced Techniques for the Storage and Use of Heterogeneous Spatial Databases*, 15 pp. Interim Report to NASA Goddard Space Flight Center, 1987.
- Peuquet, Donna J. *Advanced Techniques for the Storage and Use of Heterogeneous Spatial Databases*, 17 pp. Final Report to NASA Goddard Space Flight Center, 1987.
- Peuquet, Donna J. *Rapid Overlay of Multisource Spatial Data*. 3 pp. Mid-Year Report to NASA Goddard Space Flight Center, 1988.
- Peuquet, Donna J. *Advanced Techniques for the Storage and Use of Very Large; Heterogeneous Spatial Databases*, 3 pp. Mid-Year Report to NASA Goddard Space Flight Center, 1988.
- Peuquet, Donna J. *An Assessment of NASA Master Directory/Catalog Interoperability for Interdisciplinary Study of the Global Water Cycle*, 31pp. Final Report to NASA Goddard Space Flight Center, 1991.
- Peuquet, Donna J. *A Feasibility Assessment of the HSPF Catchment Modeling System for Integration into a Geographic Information Systems Environment*, 17pp. Report to Water Resources Division and Division of Information Technology, CSIRO, Canberra, 1993.
- Peuquet, Donna J. *Extensions to Geographic Representation*, University Consortium for Geographic Information and Analysis White Paper Report, 1996.
- Peuquet, Donna J., B. Smith and B. Brogaard. *The Ontology of Fields*, Report of a specialist meeting held under the auspices of the Varenious Project, Panel on Implementations of Geographical Concepts, 1998.
- UCGIS Model Curricula Task Force (Peuquet, Donna J. with 12 others), *Development of Model Undergraduate Curricula for Geographic Information Science & Technology - The Strawman Report*, 2003.
- Peuquet, Donna J. and Alan MacEachren. *STNexus: An Integrated Database and Visualization Environment for Space-Time Information Exploitation*, Bimonthly reports to Advanced Research and Development Activity (ARDA), 14 reports – May 2005 thru August 2007.
- Peuquet, Donna J. and Alan MacEachren, "STNexus: An Integrated Database and Visualization Environment for Space-Time Information Exploitation", final project report to ARDA/DTO (17 pp.), 2008.
- Peuquet, Donna J., "STempo – A space-time discovery and analysis environment", final project report to National Geospatial Intelligence Agency NURI Program (16 pp.), 2013.

Extramural Research Grants and Contracts

Source: U.S. Geological Survey
Amount: \$120,000
Dates: September 1975 to November 1976
Position: Co-Investigator
Title: Inventory of Computer Software for Spatial Data Handling

Source: National Science Foundation, Local Course Improvement Program (LOCI)
Amount: \$24,500
Dates: September 1977 to March 1978
Position: Co-Investigator
Title: Development of Interactive Computer Models to Assist Undergraduate Training in Geographic Information Systems, Location-Allocation Models and Computer Cartography

Source: National Science Foundation
Amount: \$36,911
Dates: June 1978 to October 1979
Position: Principal Investigator
Title: Development of a Raster-mode Geographic Information System

Source: U.S. Air Force and Defense Mapping Agency
Amount: \$80,000
Dates: October 1978 to September 1979
Position: Co-Principal Investigator
Title: Cartographic Data Structure Conversion Operations

Source: U.S. Forest Service
Amount: \$53,000
Dates: April 1979 to March 1981
Position: Co-Investigator
Title: Present and Future Needs for Spatial Data Handling within the U.S. Forest Service

Source: National Science Foundation
Amount: \$9,400
Dates: May 1982 to August 1982
Position: Principal Investigator
Title: U.S./Australia Workshop on the Design and Implementation of Computer-Based Geographic Information Systems

Source: U. S. Geological Survey
Amount: \$198,394
Dates: October 1982 to June 1986
Position: Co-Principal Investigator
Title: Design and Development of a Prototype Knowledge-Based Geographic Information System

Source: National Aeronautics and Space Administration
Amount: \$225,000
Dates: September 1983 to December 1985
Position: Co-Investigator
Title: Remote Sensing Information Sciences Research

Source: National Aeronautics and Space Administration
Amount: \$103,943

Dates: November 1983 to December 1985
Position: Principal Investigator
Title: New Data Structures and Efficient Search Methodologies for Very Large Spatial Databases

Source: Digital Equipment Corporation
Amount: \$87,000
Dates: March 1984 to March 1985
Position: Co-Principal Investigator
Title: Equipment Grant to Support Investigations on Knowledge-Based Engineering Approaches to Spatial Database Management

Source: National Science Foundation
Amount: \$75,000
Dates: March 1984 to August 1985
Position: Co-Principal Investigator
Title: Construction of a Prototype, Self-Modifying, Knowledge-Based Geographic Information System

Source: National Science Foundation
Amount: \$78,323
Dates: July 1984 to December 1987
Position: Principal Investigator
Title: The Design and Implementation of a Raster-Based Geographic Information System

Source: Digital Equipment Corporation
Amount: \$32,514
Dates: March 1986 to January 1987
Position: Principal Investigator
Title: Knowledge-Based Engineering for the Definition of Spatial Objects

Source: National Aeronautics and Space Administration
Amount: \$48,978
Dates: May 1986 to September 1988
Position: Principal Investigator
Title: Rapid Overlay of Multisource Spatial Data

Source: National Aeronautics and Space Administration
Amount: \$45,000
Dates: July 1986 to December 1988
Position: Principal Investigator
Title: Techniques for the Storage and use of Very Large, Heterogeneous Spatial Databases

Source: National Aeronautics and Space Administration
Amount: \$15,465,440
Dates: September 1989 to September 1999
Position: Co-Investigator
Title: Global Water Cycle: Extension Across the Earth Sciences (in collaboration with the Earth System Science Center)

Source: National Aeronautics and Space Administration
Amount: \$12,980
Dates: September 1990 to July 1991
Position: Principal Investigator
Title: An Evaluation of NASA's Mater Directory/Catalogue Interoperability Project

Source: U.S. Forest Service
Amount: \$19,999
Dates: September 1991 to March 1992
Position: Principal Investigator
Title: Evaluation of Geographic Information Systems Technology for Use in Spatial and Temporal Analysis of Forest Ecosystems on Landscape Scales

Source: Environmental Protection Agency
Amount: \$55,000
Dates: November 1991 to December 1992
Position: Co-Investigator
Title: Mathematical Statistics and Stochastics for Data Interpretation and Improvement for Environmental Protection Research and Management (in collaboration with the Department of Statistics)

Source: U.S. Forest Service
Amount: \$100,000
Dates: February 1992 to December 1993
Position: Co-Principal Investigator (with Alan Taylor)
Title: Development of a Prototype Data Representation and Fire Frequency Models for Geographic Information Systems Decision Support.

Source: National Science Foundation
Amount: \$250,000
Dates: November 1991 to October 1997
Position: Principal Investigator
Title: Advanced Techniques for the Representation and Use of Geographic Information

Source: Environmental Protection Agency
Amount: \$585,086
Dates: October 1996 to October 2000
Position: Co-Principal Investigator (with Alan MacEachren)
Title: An Integrated Approach for Effective Representation and Analysis of Space/Time Environmental Data

Source: John Simon Guggenheim Memorial Foundation
Amount: \$36,000
Dates: July 2000 to July 2001
Position: Guggenheim Fellow
Title: A Cognitive Approach to Geographic Knowledge Representation

Source: Centers for Disease Control and Prevention
Amount: \$328,449
Dates: September 2002 to September 2005
Position: Co-Investigator
Title: Air Pollution and Cardiac Vulnerability to Acute Events

Source: University of North Carolina, Chapel Hill (Prime: National Institutes of Health)
Amount: \$772,386
Dates: September 2003 to May 2009
Position: Co-Investigator
Title: Environmental Epidemiology of Arrhythmogenesis in WHI (Women's Health Initiative)

Source: Advanced Research and Development Activity (ARDA), National Geospatial Intelligence Agency
Amount: \$806,457
Dates: June 2005 to October 2008
Position: Co-Principal Investigator
Title: STNexus: An Integrated Database and Visualization Environment for Space-Time Information Exploitation

Source: NGA University Research Initiatives (NURI), National Geospatial Intelligence Agency
Amount: \$276,606
Dates: September 1, 2010 to August 31, 2013
Position: Principal Investigator
Title: STempo: An Interactive Visualization and Statistical Environment For Discovery and Analysis of Space-Time Patterns

Source: National Science Foundation
Title: IGERT: Big data social science – An integrative education and research program in social data analytics
Amount: \$3,270,688
Dates: July 1, 2012 to June 30, 2017
Position: Investigator

Title: STempo – Discovery and analysis of patterns in complex event data
Agency: National Geospatial Intelligence Agency
Amount: \$295,530
Dates: September 16, 2013 through September 15, 2015
Position: Principal Investigator

Teaching

Courses Taught

Geog 500 - Introduction to Geographic Research (co-taught with one other faculty member (Penn State University))

Geog 518 - Graduate Seminar in Representations of Spatiotemporal Knowledge (Penn State University)

Geog 581 & 481 - Geographic Information Systems Design and Evaluation graduate & undergraduate versions (Penn State University)

Geog 580 - Advanced Spatial Algorithms and Data Structures (Penn State University)

Geog 598A-D – (coordinator) Series of four one-credit courses – Perspectives on Physical Geography, Human Geography, Human-Environment Interactions and GIScience, respectively (Penn State University)

Geog 596 – Graduate Independent Study (Penn State University)

Geog 496 – Undergraduate Independent Study (Penn State University)

Geog 480 - Geographic Information Systems Algorithms and Data Structures (Penn State University)

Geog 463 – Geographic Information Management (Penn State University)

Geog 458 - Digital Elevation Models (Penn State University)

Geog 457 - Geographic Data Systems (Penn State University)

Geog 363 – Geographic Information Systems (Penn State University)

Geog 357 - Introduction to Geographic Information Systems (Penn State University)

Geog 356 - Computing for the Earth and Mineral Sciences (Penn State University)

Geog 160 – Mapping our Changing World, web version (Penn State University)

Geog 121 - Mapping our Changing World (Penn State University)

E&MS 101S – Earth & Mineral Sciences Freshman Seminar: Exploring Real and Virtual Worlds

Geog 455 - Graduate Seminar in Geographic Information Systems (University of California at Santa Barbara)

Quantitative Methods I (State University of New York at Buffalo)

Introductory Computer Graphics (State University of New York at Buffalo)

Various short courses on geographic information systems and spatial data handling.

Graduate Student Supervision (and dates of degree completed)

Sangshal Kwon, M.S. (1987)

John Kelmelis, Ph.D. (1991)

Elizabeth Wentz, Ph.D. (1997)

Ryan Baxter, M.S. (2000)

Liu Jian Qian, Ph.D. (2000)

Jeremy Mennis, Ph.D. (2001)

Diansheng Guo, Ph.D. (2003)

Chaoqing Yu, Ph.D. (2005)

Lee Ann Nolan, M.S.

Jianwei Dou, Ph.D.

Ritesh Agrawal, Ph.D. (2010)

Kean Huat-Soon, Ph.D

Maureen O'Marra, MGIS (2011)

Samuel Stehle, M.S. (2013)

Qian Di, MS (2013)

Brian Swedberg M.S. (2015)

Samuel Stehle, Ph.D (2017)

Fangcao Yu, M.S. (2019)

Post-docs (supervision shared with Alan MacEachren)

Monica Wachowicz

Christopher Weaver

University Service

Participation in Governance Bodies

University Faculty Senate Committee on Computer and Information Systems, 1986 to 1990

EMS College Faculty Steering Committee, 1987-1989

External Member, College of Agriculture Artificial Intelligence Laboratory Executive Committee, 1989-1992

University Advanced Geographic Information Systems Laboratory, Executive Committee, 1990-1993

University Faculty Senate Committee on Admissions, Scheduling and Student Aid, 1990-1992

University Senate, 1990-1992

Committee Memberships

EMS College Search Committee for Associate Dean for Research, College of Earth and Mineral Sciences, 1986

Chair, Departmental Space Committee, 1986-1987

Departmental Miller Award Committee, 1986-1987, 1987-1988, 1997-1998, 2002-2003 and 2007-2008, Chair, 2001-2002

University Search Committee for Head of the Center for Academic Computing, 1988 and 1994

Departmental Search Committee for Department Head, 1989 and 1994

EMS College Research Advisory Committee, 1988-1990

Member of an unofficial working group (which also included representatives from the CAC and the Libraries) which successfully landed a University-wide site license for Arc/Info, and established the internal infrastructure for its distribution and administration. This was a five-year effort, including establishment of a University GIS User's group with membership from all University Park departments using GIS, 1991-1996.

Member, Department Graduate Admissions Committee, 1993-1994, 1996-1997, 1998-1999, 2002-2003, 2004-2005 and 2006-2007, Chair 2003-2004

Member, President's Budget and Planning Advisory Committee, 1991-1992 and 1993-1994

Member, Departmental Committee on Computing Resources, 1994

Member, Department Search Committee for computer staff support position, 1995

Member, College of E&MS Environment Committee, 1995-1998

Member, Department Faculty Search Committee, 1995-96, 1997-1998, 2005, 2012-2013

Chair, Department Awards Committee, 1997-1998 and 1998-1999

Member, College 5-Year Faculty Performance Review Committee, Spring 2000, Spring 2013

Organizer, Department Coffee Hour Series, Spring 2003, Fall 2005

Member, Department Coffee Hour Series Organizing Committee, 2012-2013

Member, Department Undergraduate Curriculum Committee and Chair of GIScience Option Committee, 2002-2006

Member, Department Graduate Curriculum Committee, 2004-2006

Faculty Advisory Committee for the MGIS program, currently being developed through the John A. Dutton E-education Institute. 2003 – present

Elected member, Department Promotion and Tenure Committee, 2005-2006, 2014-2015, and Acting Chair, February-May, 2005

Elected member, Department Faculty Advisory Committee, 2005-2008 and 2009- present. Served as Chair 2006-2007 & 2011-2012

Member, College of E&MS Academic Integrity Committee, August 2006-July 2008

Chair, Department Search Committee for senior GIScience faculty position, October 2007-June 2008

Chair, PSIEE Spatial Sciences Committee, Spring, 2010

Member, College of E&MS Promotion and Tenure Committee, Fall 2009-Spring 2013

Member, ad-hoc College SWAE (Spreading the Word About E&MS) Committee, Fall 2012

Member, University Graduate Council Committee on Fellowships and Awards, Fall 2010 – Spring 2013

Member, University Cyberscience Task Force, 2010 – 2012.

Other Administrative Support

Faculty advisor for the Geography Department undergraduate majors club, 1986-1990

Operational responsibility for Department (non-Cartography) teaching and research computer laboratories, 1986-1993

Director, University Advanced Geographic Information Systems Laboratory, 1993-1996 (Co-Director 1990-1993)

Member, Internal Advisory Board, NASA Space Grant Program at Penn State, and Manager of the Undergraduate Scholars component of that program, 1989-1992

Associate Director, GeoVISTA Center (Fall 2009 – Spring 2014 & Fall 2015 - present)

Acting Director, GeoVISTA Center, 2007-2008, Summer 2014 – Summer 2015)

Director of Geography Undergraduate Programs, Summer 2014 – present)

Community Service

Geographic Information Systems Consultant, Centre Regional Planning Commission, 1986-1987 & 2002

Geographic Information Systems Consultant, Centre County Conservation District, 1987

Geographic Information Systems Consultant, Centre County Planning Department, 1988

Geographic Information Systems Consultant, Pennsylvania Dept. of Environmental Resources, 1991