

Steven M. Manson

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Academic Rank

Associate Dean for Research and Graduate Programs, College of Liberal Arts 2016–date
Professor, Department of Geography, Environment, and Society 2015–date

Education

1995 B.A. Honours (Geography), Department of Geography, University of Victoria, Canada
2002 Ph.D. (Geography), Graduate School of Geography, Clark University
Advisor: B. L. Turner II. Dissertation: Integrated Assessment and Projection of Land-Use and Land-Cover Change in the Southern Yucatán Peninsular Region of Mexico

Academic Positions

Associate Dean for Research and Graduate Programs, College of Liberal Arts 2016–date
Scholar of the College, College of Liberal Arts, University of Minnesota 2016–date
Professor, Department of Geography, Environment, and Society 2015–date
Graduate Faculty Member, Population Studies, University of Minnesota 2016–date
Resident Fellow, Institute on the Environment at the University of Minnesota 2010–date
Associate Professor, Department of Geography, University of Minnesota 2008–2015
McKnight Land-Grant Professorship, University of Minnesota 2005–2008
Assistant Professor, Department of Geography, University of Minnesota 2002–2008
Graduate Faculty Member, Conservation Biology, University of Minnesota 2003–date
Graduate Faculty Member, Geography, Environment, and Society, University of Minnesota 2002–date
Graduate Faculty Member, Geographic Information Science, University of Minnesota 2002–date

HONORS AND AWARDS

CHOICE Award for Outstanding Academic Title, International Encyclopedia of Geography (Section Editor) 2017
Gustafson Award, Census State Data Center Network 2017
Scholar of the College, College of Liberal Arts, University of Minnesota 2016
Best Paper Award, Journal of Map and Geography Libraries 2016
Supporting Women in Geography Advising Award, Department of Geography 2013
Outstanding Reviewer Award, Environmental Modelling and Software 2011
Resident Fellowship Award, Institute on the Environment at the University of Minnesota 2010
Sustainability Science Award, Ecological Society of America 2009
Thank a Teacher Award, Center for Teaching and Learning, University of Minnesota 2008
New Investigator in Earth-Sun System Science, National Aeronautics and Space Administration 2006–2009
Thank a Teacher Award, Center for Teaching and Learning, University of Minnesota 2008
Young Scholar Award, University Consortium for Geographic Information Science 2005
McKnight Land-Grant Professorship, University of Minnesota 2005–2008
Zayed International Prize for Environment, Millennium Ecosystem Assessment 2005
Faculty Summer Research Fellow, College of Liberal Arts, University of Minnesota 2004
Finalist, Association of American Geographers GISc Specialty Group Paper Competition 2000
Best Paper, University Consortium for Geographic Information Science 2000

NASA Earth System Science Fellow, National Aeronautics and Space Administration	1999–2002
Full Graduate Scholarship, Clark University	1996–2000
Pruzer-Holzhauser Award for Graduate Research, Clark University	1999
Best Undergraduate Thesis Award, Department of Geography, University of Victoria	1995
Annual Undergraduate Award, Canadian Association of Geographers	1995
Ross Geography Award, University of Victoria	1994

PUBLICATIONS AND RESEARCH

Databases

PI or Co-PI on several projects to create large databases that are used by thousands of researchers and tens of thousands of policy makers, students, and members of the public. Each project is very resource intensive and involves managing dozens of researchers, conducting research on underlying problems and solutions, and developing proposals to secure continued funding.

- National Historical Geographic Information System (NHGIS) offers harmonized US Census data for 1790–2015. It is the largest publicly-accessible population database in the world, holding hundreds of billions of data points. NHGIS disseminates data to 45,000 unique visitors per year, while an additional 380,000 access a simplified version via SocialExplorer.com.
- Integrated Public Use Microdata Series (IPUMS) is the largest international population database in the world, covering much of the world and over half a billion individuals describe by hundreds of billions of data points. Used by thousands of researchers a year, IPUMS-International converts census microdata for multiple countries into a consistent format, allowing for comparisons across countries and time periods.
- Terra Populus (TerraPop) is on track to be the largest curated and integrated global dataset for combined human-environment data. It includes microcensus data and terabytes of data on social and environmental features.
- School Attendance Boundary Information System (SABINS) integrates and disseminates harmonized school district boundaries and attendant computational statistical model for all major school districts in the US. We maintain existing data and handed off future data to the Department of Education's National Center for Education Statistics.

Books

- Manson, S. M. (ed.) (2017). *Mapping, Society, and Technology*. Minneapolis, Minnesota: University of Minnesota Libraries Publishing. URL: <http://open.lib.umn.edu/mapping> (Textbook).
- Parker, D. C., T. Berger and S. M. Manson (eds.) (2002). *Agent-Based Models of Land-Use and Land-Cover Change: Report and Review of an International Workshop Irvine, California October 4–7, 2001*. LUCC Report Series No. 6. Bloomington, Indiana: LUCC International Project Office.

Articles and Chapters (* = advisee or research associate)

- Haynes, D.* A. Jokela, and S. M. Manson (2018). IPUMS-Terra: Integrated Big Heterogeneous Spatio-Temporal Data Analysis System. *Journal of Geographical Systems*. 20(1): (Forthcoming)
- Manson S.M., and M. Kernik* (2018). Human–Environment Interactions and Scalable Remote Sensing. In S. Liang (ed), *Comprehensive Remote Sensing*, vol. 9, pp.4–16. Oxford: Elsevier. DOI: 0.1016/B978-0-12-409548-9.10413.
- Matson, L. and S. M. Manson (2017). Surveillance. In S. M. Manson (ed) *Mapping, Society, and Technology*. Minneapolis, Minnesota: University of Minnesota Libraries Publishing.
- Manson, S. M. and L. Matson (2017). *Maps, Society, and Technology*. In S. M. Manson (ed) *Mapping, Society, and Technology*. Minneapolis, Minnesota: University of Minnesota Libraries Publishing.
- Manson, S. M., M. Kernik,* D. Bonsal,* L. Matson,* E. Deluca,* A. Srinivasamohan,* and S. Strosberg* (2017). Web Mapping Tools and Pedagogical Material to Support Spatial Thinking. In *Innovative Learning and Teaching: Experiments Across the Disciplines*. I. D. Alexander and R. K. Poch (eds). Minneapolis, Minnesota: University of Minnesota Libraries Publishing, pp. 124–136. URL: <http://open.lib.umn.edu/innovativeteaching/>

- Tam P. I., Krzyzanowski, B.,* Oakes, J. M., Kne, L.*, and Manson, S. M. (2017). Spatial variation of pneumonia hospitalization risk in Twin Cities metro area, Minnesota. *Epidemiology & Infection* 145(15): 3274-3283. PMID: <https://www.ncbi.nlm.nih.gov/pubmed/29039282>
- Manson, S. M., T. A. Kugler, and D. A. Haynes II (2017). Deserts in the Deluge: IPUMS-Terra and the Spatial Demography of Big Data. European Regional Science Association Congress 2017 [<https://az659834.vo.msecnd.net/eventsairwesteuprod/production-ersa-public/0ea3b821f09c4122aa11e0be3d7c5cb3>]
- Haynes, D.* S. M. Manson, and E. Shook (2017). Terra Populus' Architecture for Integrated Big Geospatial Services. *Transactions in GIS*. 21(3): 546-559. DOI: 10.1111/tgis.1228
- Kugler, T. A.,*S. M. Manson, and J. Donato* (2017). Spatiotemporal aggregation for temporally extensive international microdata. *Computers, Environment and Urban Systems* 63: 26-37. <http://dx.doi.org/10.1016/j.compenvurbsys.2016.07.007>.
- Haynes, D.,* Ray, S., and Manson, S. M. (2017). Terra Populus: Challenges and Opportunities of Heterogeneous Big Spatial Data. In *Advances in Geocomputation*. D.A. Griffith, C. Yongwan, D.J. Dean (eds.). Berlin: Springer, pp. 115-121.
- Manson, S. M., T. A. Kugler, and D. A. Haynes II (2016). Deserts in the Deluge: TerraPopulus and Big Human-Environment Data. *Proceedings of GIScience 2016*, Montreal, Canada. [<http://escholarship.org/uc/item/76z9g4vb>]
- Haynes II, D. A.* and S. M. Manson (2016). Advanced Cyberinfrastructure for Analysis of Big Spatial Data. *NSF Geospatial Data Science Workshop* (GSDS Paper 5, http://cybergis.illinois.edu/events/geodatascience_workshop/home).
- Manson, S. M., L. Kne, and F. Harvey (2016). U-Spatial: Support for research and teaching at the spatial university. In *STEM and GIS in Higher Education*. D. Cowen (ed). Redlands, CA: ESRI Press., pp. 1-16.
- Manson, S. M. (2016). Complexity. In *Oxford Bibliographies in Geography*. B. Warf, Ed. New York: Oxford University Press. Online: DOI: 10.1093/OBO/9780199874002-0139.
- Manson, S. M., Nelson, K. C., N. Jordan, R. F. Brummel* (2016). Effect of social networks on adoption of multifunctional agriculture. *Environmental Modeling and Software* 75: 388-401.
- O'Sullivan, D., T. Evans, S. M. Manson, S. Metcalf, A. Ligmann-Zielinska, and C. Bone (2016). Strategic Directions for Agent-based Modeling: Avoiding the YAAWN Syndrome. *Journal of Land Use Science* 11(2): 177-187.
- Turner II, B. L., J. Geoghegan, D. Lawrence, C. Radel, B. Schmook, C. Vance. S. Manson, E. Keys, D. Foster, P. Klepeis, H. Vester, J. Rogan, R. Roy Chowdhury, L. Schneider, R. Dickson, and Y. Ogneva-Himmelberger (2016). Land system science and the social-environmental system: the case of the Southern Yucatán Peninsular Region Project. *Current Opinions in Environmental Sustainability* 19: 8-29.
- Kugler, T. A.,* D. Van Riper,*S. M. Manson, D. A. Haynes II,* J. Donato, and K. Stinebaugh* (2015). Terra Populus: Workflows for Integrating and Harmonizing Geospatial Population and Environmental Data. *Journal of Map and Geography Libraries* 11(2): 180-206.
- Haynes II, D. A.*S. Ray, S. M. Manson, and A. Soni* (2015). High Performance Dynamic Analysis of Big Spatial Data. *IEEE Big Data in the Geosciences*, pp. 1892-1896.
- Jordan, N. R., K. M. Clower,* S. M. Manson, D. B. Bonsal,* J. L. Immich* (2015). Land use and land cover in critical source areas on small dairy farms in the eastern United States. *Journal of Soil and Water Conservation* 70 (4): 257-266.
- Manson, S. M. (2015). Digital Computer. In *Cartography in the Twentieth Century*. M. Monmonier (ed). Chicago, IL: University of Chicago Vol 6, pp. 269-270.
- Manson, S. M., D. Bonsal,* M. Kernik*, and E. F. Lambin (2015). Geographic Information Systems and Remote Sensing. In *International Encyclopedia of the Social and Behavioral Sciences, 2nd edition*. James D. Wright (ed). Oxford: Elsevier Vol 10, pp. 64-68.
- O'Sullivan, D. and S. M. Manson (2015). Do Physicists Have 'Geography Envy'? And What Can Geographers Learn From It? *Annals of the Association of American Geographers* 105 (4): 704-722.
- Sun, S.* and S. M. Manson (2015). Simple Agents, Emergent City: Agent-Based Modeling of Intraurban Migration. In *Computational Approaches for Urban Environments*. Marco Helbich (ed). Berlin: Springer, pp. 123-147.
- Manson, S. M., J. Shannon,* S. Eria,* L. Kne,* K. R. Dyke,* S. Nelson,* L. Batra,* D. Bonsal,* M. Kernik,* J. L. Immich,* and L. Matson* (2014). Resource needs and pedagogical value of web mapping for spatial thinking. *Journal of Geography* 113 (3): 107-117.
- Nelson, K. C., R. F. Brummel,* N. Jordan, and S. M. Manson (2014). Social networks in complex human and natural systems: The case of rotational grazing, weak ties, and U.S. eastern dairy landscapes. *Agriculture and Human Values* 31 (2): 245-259.

- Berland, A.* and S. M. Manson (2013). Patterns in residential urban forest structure along a synthetic urbanization gradient. *Annals of the Association of American Geographers* 103 (4): 749-763.
- Crawford C. J.,* S. M. Manson; M. E. Bauer; D. K. Hall (2013). Multitemporal snow cover mapping in mountainous terrain for Landsat climate data record development. *Remote Sensing of Environment* 135: 224-233.
- Manson, S. M. (2013). Public Cyber-Infrastructure for Spatial Analysis. *Latin American Studies Association Forum* 44 (1): 6-8.
- Harvey, F., S. M. Manson, and L. Kne (2013). U-Spatial: A Consortium for the Spatial University. *Essays in Geography and GIS*, Volume 6, pp. 11-18. Esri Press, Redlands CA.
- Kirk, R. W.*, P. V. Bolted, and S. M. Manson (2012). Spatio-temporal trend analysis of long-term development patterns (1900-2030) in a Southern Appalachian County. *Landscape and Urban Planning*. 104 (1): 47-58.
- Manson, S. M., L. Kne,* K. Dyke,* J. Shannon,* and S. Eria* (2012). Using eye tracking and mouse metrics to test usability of web mapping navigation. *Cartography and Geographic Information Science* 39 (1): 48-60.
- Sun, S.* and S. M. Manson (2012). Intraurban Migration, Neighborhoods and City Structure. *Urban Geography* 33 (7):1008-1029.
- Harvey, F., L. Kne, S. M. Manson, and K. Johnson* (2012). U-Spatial: Support for the spatial sciences and creative activities. *Cultivating Change in the Academy*. Din, A., F. Anklesaria, and E. Nater (eds.). University of Minnesota, Minneapolis, Minnesota.
- Berland, A.,* B. Shuman, S. M. Manson (2011). Simulated importance of dispersal, disturbance, and landscape history in long-term ecosystem change in the Big Woods of Minnesota. *Ecosystems* 14 (3): 398-414.
- Sun, S.* and S. M. Manson (2011). Social network analysis of the academic GISc community. *Professional Geographer*. 63(1): 1-16.
- Manson, S. M., S. Sun,* D. Bonsal* (2011). Agent-based modeling and complexity. In *Agent-based Models of Geographical Systems*. A. Heppenstall, A. Crooks, L. See, and M. Batty (eds). Berlin, Springer, pp. 125-139.
- McMaster, S., R. Edsall, and S. M. Manson. (2011). Geospatial Research, Education and Outreach Efforts at the University of Minnesota. *Cartography and Geographic Information Science* 38 (3):335-337.
- Ghosh, D.*, S. M. Manson, and R. B. McMaster (2010). Delineating West Nile Virus transmission cycles at various scales: The Nearest Neighbor Distance-Time model. *Cartography and Geographic Information Science* 37 (2): 149-163.
- Nelson, E., H. Sander,* P. Hawthorne, M. Conte, S. M. Manson, S. Polasky (2010). Projecting global land use change and its effect on ecosystem service provision and biodiversity with simple techniques. *PLOS ONE* 5 (12) e14327.
- Sander, H.A.*, D. Ghosh,* D. Van Riper,* and S. M. Manson (2010). How do you measure distance in spatial models? An example using open space valuation. *Environment and Planning B* 37 (5): 874-894.
- McMaster, R. B. and S. M. Manson (2010). Geographic Information Systems and Science. In *Manual of Geospatial Technology and Science*, J. D. Bossler, R. B. McMaster, C. Rizos, and J. B. Campbell (eds.). London: Taylor and Francis, pp. 401-410.
- Parker, D. C., S. M. Manson, M. Janssen, M. J. Hoffmann and P. J. Deadman (2010). Multi-agent systems for the simulation of land use and land cover change: a review. Reprinted in *Computational Social Science*, Gilbert N. (ed). Thousand Oaks, CA: Sage Publications, pp. 670-690.
- Manson, S. M., H.A. Sander,* D. Ghosh,* J. M. Oakes, M. W. Orfield, W. J. Craig, T. F. Luce, E. Myott,* S. Sun* (2009). Parcel data for research and policy. *Geography Compass* 3 (2): 698-726.
- Kayzar, B., S. M. Manson, H. Sander, and N. Young (2009). Template for a toolkit: community growth options for peripheral communities. *CURA Reporter* 39 (4): 25-35.
- Manson, S. M. (2009). Complexity, chaos, and emergence. In *Companion on Environmental Geography*. Castree, N., D. Demeritt, D. Liverman and B. Rhoads. Oxford, United Kingdom: Blackwell, pp 66-80.
- Manson, S. M. (2009). Simulation modeling. In *International Encyclopedia of Human Geography*. R. Kitchin and N. Thrift (eds). Oxford, United Kingdom: Elsevier, Vol. 1, pp. 132-137.
- Ghosh, D.* and S. M. Manson (2008). Robust principal component analysis and geographically weighted regression: urbanization in the Twin Cities Metropolitan Area (TCMA). *URISA Journal* 20 (1): 15-25.
- Manson, S. M. (2008). Does scale exist? An epistemological scale continuum for complex human-environment systems. *Geoforum* 39 (2): 776-788.
- Messina, J. P., T. P. Evans, S. M. Manson, A. M. Shortridge, P. J. Deadman, and P. H. Verburg (2008). Complex systems models and the management of error and uncertainty. *Journal of Land Use Science* 3 (1): 11-25.
- Parker, D. C., B. Entwisle, R. R. Rindfuss, L. K. VanWey, S. M. Manson, E. Moran, L. An, P. Deadman, T. Evans, M. Linderman, S. M. Mussavi Rizi, and G. Malanson (2008). Case studies, cross-site comparisons, and the challenge of

- generalization: comparing agent-based models of land-use change in frontier regions. *Journal of Land Use Science* 3 (1): 41-72.
- Wu, J.,* M. Bauer, D. Wang and S. M. Manson (2008). A comparison of illumination geometry-based methods for topographic correction of QuickBird images of an undulant area. *ISPRS Journal of Photogrammetry and Remote Sensing* 63: 223-236.
- Manson, S. M. (2008). Agent-based modeling. In *Encyclopedia of Geographic Information Science*. K. Kemp (ed). Thousand Oaks, California: Sage, pp. 4-6.
- Parker, D. C., D. G. Brown, J. G. Polhill, P. J. Deadman and S. M. Manson (2008). Illustrating a new 'conceptual design pattern' for agent-based models of land use via five case studies—the MR POTATOHEAD framework. In *Agent-Based Modelling in Natural Resource Management*. A. L. Paredes and C. H. Iglesias (eds). Valladolid, Spain: Universidad de Valladolid. pp. 23-51.
- Manson, S. M. and T. Evans (2007). Agent-based modeling of deforestation in southern Yucatán, Mexico, and reforestation in the Midwest United States. *Proceedings of the National Academy of Sciences* 104 (52): 20678-20683.
- Sander, H.* and S. M. Manson (2007). Heights and locations of artificial structures in viewshed calculation: how close is close enough? *Landscape and Urban Planning* 82 (4): 257-270.
- Manson, S. M. (2007). Challenges in evaluating models of geographic complexity. *Environment and Planning B* 34(2): 245-260.
- Evans, T. and S. M. Manson (2007). Space, complexity, and agent-based modeling (Invited editorial). *Environment and Planning B* 34 (2): 196-199.
- Manson, S. M. (2006). Land use in the Southern Yucatan Peninsular Region of Mexico: scenarios of population and institutional change. *Computers, Environment, and Urban Systems* 30(3): 230-253.
- Manson, S. M. (2006). Bounded rationality in agent-based models: experiments with evolutionary programs. *International Journal of Geographic Information Science* 20 (9): 991-1012.
- Manson, S. M. and D. O'Sullivan (2006). Complexity theory in the study of space and place. *Environment and Planning A* 38 (4): 677-692.
- Manson, S. M., J. Geoghegan and B. L. Turner II (2006). State of the art in describing future changes in ecosystem services: forecasting changes in land use and land cover. In *Millennium Ecosystem Assessment: Ecosystems and Well-Being (Volume 2: Scenarios)*. H. Mooney and A. Cropper (eds). Geneva, Switzerland: Island Press, pp. 74-76.
- O'Sullivan, D., S. M. Manson, J. Messina and T. Crawford (2006). Space, place and complexity science (Invited editorial). *Environment and Planning A* 38 (4): 611-617.
- Manson, S. M. and M. Bauer (2006). Changing Landscapes in the Twin Cities Metropolitan Area. *CURA Reporter* 36(3): 3-11.
- Manson, S.M. (2005). Agent-based modeling and genetic programming for modeling land change in the Southern Yucatan Peninsular Region of Mexico. *Agriculture, Ecosystems and Environment* 111 (1): 47-62.
- Crawford, T., J. Messina, S. M. Manson and D. O'Sullivan. (2005). Complexity science, complex systems, and land use research (Invited editorial). *Environment and Planning B* 32 (6): 792-797.
- Brown, D. G., R. Walker, S. M. Manson and K. Seto (2004). Modeling land use and land cover change. In *Land Change Science: Observing, Monitoring, and Understanding Trajectories of Change on the Earth's Surface*. G. Gutman, A. Janetos, C. Justice, E. Moran, J. Mustard, R. Rindfuss, D. Skole and B. L. Turner II (eds). Dordrecht, Netherlands: Kluwer Academic Publishers, pp. 395-409.
- Manson, S. M. (2004). The SYPR integrative assessment model: complexity in development. In *Integrated Land-Change Science and Tropical Deforestation in the Southern Yucatán: Final Frontiers*. B. L. Turner, D. Foster and J. Geoghegan (eds). Oxford, United Kingdom: Clarendon Press of Oxford University Press, pp. 271-291.
- Parker, D. C., S. M. Manson, M. Janssen, M. J. Hoffmann and P. J. Deadman (2003). Multi-agent systems for the simulation of land use and land cover change: a review. *Annals of the Association of American Geographers* 93 (2): 314-337.
- Manson, S. M. (2003). Epistemological possibilities and imperatives of complexity research: a reply to Reitsma. *Geoforum* 34 (1): 17-20.
- Manson, S. M. (2003). Validation and verification of multi-agent models for ecosystem management. In *Complexity and Ecosystem Management: The Theory and Practice of Multi-Agent Approaches*. M. Janssen (ed). Northampton, Massachusetts: Edward Elgar Publishers, pp. 63-74.
- Manson, S. M., S. J. Ratick and A. R. Solow (2002a). Decision making and uncertainty: Bayesian analysis of potential flood heights. *Geographical Analysis* 34 (2): 112-129.

- Manson, S. M. (2002). Integrated assessment and projection of land-use and land-cover change in the Southern Yucatán Peninsular Region of Mexico. In *Agent-Based Models of Land-Use and Land-Cover Change*. D. C. Parker, T. Berger and S. M. Manson (eds). Bloomington, Indiana: LUCC International Project Office, pp. 56-59.
- Manson, S. M. (2001). Simplifying complexity: a review of complexity theory. *Geoforum* 32 (3): 405-414. DOI: [http://dx.doi.org/10.1016/S0016-7185\(00\)00035-X](http://dx.doi.org/10.1016/S0016-7185(00)00035-X)
- Turner II, B. L., S. Cortina Villar, D. Foster, J. Geoghegan, E. Keys, P. Klepeis, D. Lawrence, P. Macario Mendoza, S. M. Manson, Y. Ogneva-Himmelberger, A.B. Plotkin, D.P. Salicrup, Roy Chowdhury R., B. Savitsky, L. Schneider, B. Schmook and C. Vance (2001). Deforestation in the Southern Yucatan Peninsular Region: an integrative approach. *Forest Ecology and Management* 154 (3): 353-370.

Edited Collections

- Manson, S. M. (2017). Section Editor for Geocomputation and Spatial Analysis (22 articles) in *The International Encyclopedia of Geography: People, the Earth, Environment, and Technology*. Richardson, D. (ed). New York: Wiley.
- Evans, T. and S. M. Manson (2007). Special Theme Issue: Agent-Based Modeling of Land Change. *Environment and Planning B* 34 (2): 196-295.
- O'Sullivan, D., S. M. Manson, J. Messina and T. Crawford (2006). Special Theme Issue: Space, Place and Complexity Science. *Environment and Planning A* 38 (4): 611-692.
- Crawford, T., J. Messina, S. M. Manson and D. O'Sullivan (2005). Special Theme Issue: Complexity Science, Complex Systems, and Land-Use Research. *Environment and Planning B* 32 (6): 792-875.

Books Reviews

- Manson, S. M. (2015). Spatial Simulation: Exploring Pattern and Process. *International Journal of Geographic Information Science* 29(8): 1506-1507.
- Bonsal, D. B. and S. M. Manson (2011). Complexity and Spatial Networks: In Search of Simplicity. *Journal of Regional Science* 51 (2): 402-403.
- Manson, S. M. (2006). Global Complexity. *Progress in Human Geography*. 30(6): 420-422.
- Manson, S. M. (2006). Catastrophe Modeling: A New Approach to Managing Risk. *Journal of Regional Science* 46(4): 794-796.
- Manson, S. M. (2004). Spatial Evolutionary Modeling. *Journal of Artificial Societies and Social Simulation* 7(2): R1.
- Manson, S. M. (2004). Self-Organization and the City. *Political Geography* 23(8): 1063-1065.
- Manson, S. M. (2002). Tools for Land Use Analysis on Different Scales with Case Studies for Costa Rica. System Approaches for Sustainable Agriculture Development. *Journal of Artificial Societies and Social Simulation* 4(3): R1.
- Manson, S. M. (1999). Principles of Geographic Information Systems: Spatial Information Systems and Geostatistics. *Economic Geography* 75(4): 422-423.

Presentations

- Manson, S. M.(2018). Commentary on a Globe-Shaped Crystal Ball: The Next Fifty Years of Geographical Analysis. *Association of American Geographers Annual Meeting*, New Orleans, Louisiana.
- Manson, S. M. (2017). Addressing Non-Academic and Administrative Job Readiness. ADE-ADFL Summer Seminar Midwest, Minneapolis, Minnesota.
- Manson, S. M. (2017). Agent-based modeling: Challenges and Opportunities. *Association of American Geographers Annual Meeting*, Boston, Massachusetts.
- Manson, S. M. (2017). White Shoes and Happy Cows: Social Networks and Human-Environment Dynamics in Agriculture. *Population Studies & Training Center Speaker Series*, Brown University. Providence, Rhode Island.
- Manson, S. M. (2017). Spatial demography engine for exploring population-environment dynamics. *Spatial Structures in the Social Sciences*, Brown University. Providence, Rhode Island.
- Manson, S. M. and S. McMaster (2017). MGIS Capstone: transitioning from a thesis to an experiential portfolio. *Association of American Geographers Annual Meeting*, Boston, Massachusetts.
- Manson, S. M. (2016). White Shoes and Happy Cows: Social Networks and Human-Environment Dynamics in Agriculture. *Department of Geography Colloquium*, University of Texas. Austin, Texas.

- Haynes II, D. A., T. A. Kugler, E. Shook, and S. M. Manson. (2016) Terra Populus: Integrated Data on Population and Environment. *Gateways 2016*, San Diego, California.
- Manson, S. M. (2016). Minnesota Population Center: Big population data. *Population Research Center, University of Texas*. Austin, Texas.
- Manson, S. M., L. Kne, M. Kernik, L. Matson, and E. DeLuca (2016). Developing a suite of web mapping tools and pedagogical material that supports spatial thinking. *Provost's Innovations in Teaching Showcase*, Minneapolis, Minnesota.
- Manson, S. M. (2016). Extending STEM across campus using GIS (Panel presentation). *Association of American Geographers Annual Meeting*, San Francisco, California.
- Manson, S. M. (2016). White Shoes and Happy Cows: Social Networks and Human-Environment Dynamics in Agriculture. *Minnesota Population Center Speaker Series, University of Minnesota*. Minneapolis, Minnesota.
- Kugler, T. and S. M. Manson (2015). Terra Populus: Population and Environment Data for Research on Human Well-Being. *SPATIAL 2015*, Santa Barbara, California.
- Haynes II, D. A., S. Ray, S. M. Manson, D. Van Riper, A. Soni, and A. Demke Brown (2015). Towards a High Performance System for Heterogeneous Big Spatial Data. In Proceedings of the 2015 CyberGIS All Hands Meeting (CyberGIS AHM'15), Reston, Virginia.
- Manson, S. M., T. Kugler, and D. Van Riper (2015). Terra Populus: Population and Environment Data for Research on Human Well-Being. *Association of American Geographers Annual Meeting*, Chicago, Illinois.
- Haynes II, D. A., T. Kugler, D. Van Riper, and S. M. Manson (2015). Terra Populus: Geocomputation for Population and Environment Data. *Geocomputation 2015*, Dallas, Texas.
- Manson, S. M., K. Nelson, N. Jordan, B. (2014). Social networks and ecosocial feedback in the governance of multifunctional agriculture. *Global Land Project Open Science Meeting*. Berlin.
- Manson, S. M., T. Kugler, and D. Van Riper (2014). Terra Populus: Integrated Data on Population and Environment. *Association of American Geographers Annual Meeting*, Tampa, Florida.
- Ruggles, S., C. Fitch, T. Kugler, J. Foley, S. M. Manson, M. Sobek, P. Clark, and D. Van Riper (2013). Terra Populus: Integrated Data on Population and Environment. *XXVII IUSSP International Population Conference*, Busan, Korea.
- Van Riper, D. and S. M. Manson (2013). Regionalization strategies for Terra Populus. *Association of American Geographers Annual Meeting*, Los Angeles, California.
- Manson, S. M., T. Kugler, and D. Van Riper (2013). Terra Populus: Integrated Data on Population and Environment. *CyberGIS 2013*, Seattle, Washington.
- Van Riper, D. and S. M. Manson (2013). From big data to the long tail: data discovery, archiving, workflows, and integration from the NSF DataNet Projects. *Association of American Geographers Annual Meeting*, Los Angeles, California.
- Manson, S. M. (2012). Generalizing agent-based models of land use change. *Climate Change Impacts and Integrated Assessment (CCI/IA) Workshop XVIII*, Snowmass, Colorado.
- Manson, S. M. (2012). Spatial Infrastructure for the Spatial University. *Center for Library Initiatives Annual Conference*, Minneapolis, Minnesota
- Manson, S. M. (2012). Epidemiology Division Seminar, White shoes and happy cows, Epidemiology & Community Health, University of Minnesota.
- Ruggles, S., C. Fitch, J. Foley, S. M. Manson, and M. Sobek (2012). Terra Populus: A Global Population/Environment Data Network. *Population Association of America Annual Meeting*, San Francisco, California.
- Crawford, C. J., M. E. Bauer, and S. M. Manson (2011). Multi-temporal snow cover mapping in mountainous terrain using Landsat Remote sensing. PECORA 18, Herndon, Virginia.
- Manson, S. M. (2011). White shoes and happy cows, Joint colloquium of the Department of Geographic, Center for the Study of Institutions, Population and Environmental Change, and Anthropological Center for Training and Research on Global Environmental Change, University of Indiana.
- Manson, S. M. and O'Sullivan D. B. (2011). Do physicists have geography envy? *Association of American Geographers Annual Meeting*, Seattle, Washington.
- Sun, S. and S. M. Manson (2010). An Agent-based Model of Housing Search and Intraurban Migration in the Twin Cities of Minnesota. Proceedings of IEMSS Fifth Biennial Meeting, Ottawa, Canada.
- Manson, S. M. (2010). Spatially-explicit modeling of complex systems: HELIA linkages to the MAP project. Coupled Human-Environment Systems Seminar Series, University of Florida.
- Crawford, C. J., M. E. Bauer, and S. M. Manson (2010). Time-series development for geophysical research: the role of historical Landsat remote sensing. American Geophysical Union, San Francisco, California.

- Manson, S. M., K. Nelson, N. Jordan, B. Vondracek, K. Clower, R. Brummel, A. Berland, D. Bonsal, G. Brand (2010). Developing a model of ecosocial feedback for multifunctional agriculture as a pathway to land-change sustainability. *Global Land Project Open Science Meeting*, Tempe, Arizona.
- Kayzar, B. and S. M. Manson (2010). Discovering the complexity of metropolitan life: interactive maps, online modules, and conversations with urban professionals. *Academic Technology Showcase*, University of Minnesota.
- Jordan, N., K. Nelson, S. M. Manson, R. Brummel, and K. Clower (2010). Developing an eco-social dynamic model for grazing-based dairy production in the United States. *Association of American Geographers Annual Meeting*, Washington, District of Columbia.
- Manson, S. M., S. Sun, K. Nelson, and N. Jordan (2010). Linking landscape pattern and process via sociospatial networks. *Association of American Geographers Annual Meeting*, Washington, District of Columbia.
- Jordan, N., S. M. Manson, K. Nelson, B. Vondracek, T. Arnold, R. Brummel, K. Clower, A. Berland, D. Bonsal, G. Brand, S. Graves (2010). Can rotational-grazing dairy farms really balance production and conservation? *Agroecology Graduate Program*, University of Wisconsin, Madison.
- Jordan, N., S. M. Manson, K. Nelson, B. Vondracek, T. Arnold, R. Brummel, K. Clower, A. Berland, D. Bonsal, G. Brand, S. Graves (2010). Rotational grazing: development of a system of productive-conservation agriculture. *Conservation Biology Seminar*, University of Minnesota.
- Jordan, N., S. M. Manson, K. Nelson, B. Vondracek, T. Arnold, R. Brummel, K. Clower, A. Berland, D. Bonsal, G. Brand, S. Graves (2010). Rotational grazing: development of a system of productive-conservation agriculture. *Crop and Soil Science Seminar Series*, Pennsylvania State University, Department of Crop and Soil Sciences.
- Berland, A. M. and S. M. Manson (2010). Urban forest ecosystem services along an urbanization gradient in the Twin Cities, MN. *Association of American Geographers Annual Meeting*, Washington, District of Columbia.
- Manson, S. M., B. Kayzar, L. Kne, and S. Eria (2009). Digital mapping in a connected age. *Technology Enhanced Learning Workshop*, University of Minnesota.
- Manson, S. M. (2009). Does scale exist?. *Frontiers in the Environment Lecture Series*, Institute on the Environment, University of Minnesota.
- Manson, S. M., B. Kayzar, and L. Kne (2009). Minnesota Interactive Internet Mapping Project: web mapping in K-16 education. *Academic Technology Showcase*, University of Minnesota.
- Kayzar, B. S. M. Manson, L. Kne, and S. Eria (2009). Web mapping for data-driven applications in teaching and learning. *Data-driven Applications in Teaching and Learning*, University of Minnesota.
- Manson, S. M. (2008). Web mapping for physical, virtual and mobile learning spaces. *Technology Enhanced Learning Seminar*, University of Minnesota.
- Manson, S. M. (2008). Minnesota Interactive Internet Mapping Project. *Bamboo Project Seminar*, University of Minnesota.
- Manson, S. M. (2008). Global change in local places: modeling decision making in complex social and ecological systems. *Remote Sensing Seminar*, Geographic Information Science Center of Excellence, South Dakota State University.
- Manson, S. M., B. Kayzar and L. Kne (2008). Minnesota Interactive Internet Mapping Project: web mapping in K-16 education. *Academic Technology Showcase*, University of Minnesota.
- Kne, L., S. M. Manson and J. Elliott (2008). Minnesota Interactive Internet Mapping Project: open source web mapping in K-16 education. *First Annual Graduate and Professional Student Conference*, University of Minnesota.
- Manson, S. M. and L. Kne (2008). Remote Sensing and GIS for Urban Environmental Education: The Minnesota Interactive Internet Mapping (MIIM) Project. *Association of American Geographers Annual Meeting*, Boston, Massachusetts.
- Manson, S. M. (2008). Spatial analysis for land use, health, and population dynamics. *Advancing Interdisciplinary Research and Action on Health and Education Disparities*, Minneapolis, Minnesota.
- Manson, S. M. (2007). Changing human-environment landscapes: actors, institutions, and the environment on urban and rural frontiers. *Department of Geography Colloquium*, University of Utah.
- Manson, S. M. (2007). North American land change: actors, institutions, and the environment on three frontiers. *Department of Ecology, Evolution, and Behavior Seminar*, University of Minnesota.
- Manson, S. M. (2007). Spatially-explicit modeling of complex systems: HELIA linkages to the MAP project. *Workshop on Social Dynamics*, Department of Sociology, University of Florida.
- Manson, S. M. (2007). Conservation in human-dominated landscapes: actors, institutions, and the environment on the new Mexican frontier. *Conservation Biology Seminar*, University of Minnesota.
- Sun, S.-P. and S. M. Manson (2007). Distance cartogram: concept, approximate algorithm, and examples. *International Workshop on Geographic Information Science*, Beijing, China.
- Marshall, J. D., H. Sander and S. M. Manson (2007). Air pollution and urban form: evidence from satellite data. *5th WSEAS International Conference on Environment, Ecosystems and Development*, Puerto De La Cruz, Tenerife, Canary Islands.

- Manson, S.M. (2007). Spatial analysis and agent-based modeling for understanding the population dynamics of changing human-environment landscapes. *Brookings Institution*, Washington, District of Columbia.
- Kne, L., S. M. Manson and J. Elliott (2007). Minnesota Interactive Internet Mapping Project: open source web mapping in K-16 education. *Free and Open Source Software for Geospatial (FOSS4G)*, Victoria, Canada.
- Kne, L., T. Swanson, and S. M. Manson (2007). Minnesota Interactive Internet Mapping Project: open source web mapping in K-16 education. *MN GIS/LIS Annual Conference*, Rochester, MN.
- McMaster, S., R. McMaster, S. M. Manson, and R. Skaggs (2007). Professional GIS Education in the United States: Models of Access and Delivery. *23th International Cartographic Conference*, Moscow, Russia.
- McMaster, S., S. M. Manson, R. Skaggs and R. McMaster (2007). Ten years of professional GIS education at the U of M: past experiences, new challenges. *Association of American Geographers Annual Meeting*, San Francisco, California.
- Manson, S. M., T. Swanson and S. Sun (2007). Linking complex models to simple GIS or simple models to complex GIS? *Association of American Geographers Annual Meeting*, San Francisco, California.
- Sander, H. and S. M. Manson (2007). Artificial structure locations and heights in viewshed calculation: how much accuracy is necessary? *Association of American Geographers Annual Meeting*, San Francisco, California.
- Keys, E. G and Manson, S. M. (2006). Beyond people and pixels: integrating cultural-political ecology and agent-based models. *Association of American Geographers Annual Meeting*, Chicago, Illinois
- Manson, S. M. (2006). Global change, local places: models of individual decision making on the new Mexican frontier. Yi-Fu Tuan Lecture Series, Department of Geography, University of Wisconsin.
- Manson, S. M. (2006). Modeling land change along Mexico's New Frontier: understanding the local dimensions of global environmental change. Geography Department Colloquium Series, Syracuse University.
- Manson, S. M. (2006). Agriculture on the edge: scenarios of population, technology, and institutions on Mexico's New Frontier. MPC Seminar, Minnesota Population Center, University of Minnesota.
- Jordan, N., K. Warner, S. M. Manson, K. C. Nelson, F. Kirschenmann, S. Morse, J. Neal and D. Wyse (2006). Ecology, trade, and sustainable agriculture in the American Midwest: developing perennial-based agricultural systems. The Green Lands Blue Waters model. *American Association for the Advancement of Science Annual Meeting*, St. Louis, Missouri.
- Manson, S. M. (2005). Geographic Information Science. College of Architecture and Landscape Architecture, University of Minnesota.
- Manson, S. M. (2005). Theoretical foundations of spatially-explicit dynamic systems modeling. Carolina Population Center, University of North Carolina (April).
- Manson, S. M. (2005). Meeting the challenge of complexity with spatial models. Symposium on Spatial Modeling, Department of Sociology, University of North Carolina (October).
- Manson, S. M. (2005). Decision making of agriculturalist households in Mexico: complexity-based models of interactions among individuals, institutions, and environment. Environmental and Resource Economics Seminar, Department of Applied Economics, University of Minnesota.
- Manson, S. M. (2005). Evolutionary programming and agent decision making in multi-agent frameworks of land change. *6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community*. Bonn, Germany: University of Bonn.
- Manson, S. M. (2005). Establishing GIS professional Masters Degrees. *Association of American Geographers Annual Meeting*, Denver, Colorado.
- Manson, S. M. (2005). Evaluating models of geographic complexity: challenges of policy, method, and theory. *Association of American Geographers Annual Meeting*, Denver, Colorado.
- Manson, S. M. (2005). Genetic programming as an isomorphic analog to bounded rationality in agent-based models. *Proceedings of Geocomputation 2005*. Ann Arbor, Michigan: University of Michigan [CD-ROM].
- Manson, S. M. (2004). Computational intelligence approaches to modeling human decision making in the context of social and ecological systems. School of Public Health, Division of Biostatistics, School of Public Health, University of Minnesota.
- Manson, S. M. (2004). Global change, local places: modeling decision making in the context of complex social and ecological systems at the regional scale. Water Resources Science Seminar, College of Agricultural, Food and Environmental Sciences, University of Minnesota.
- Manson, S. M. (2004). Agents and bounded rationality in land-change models. *Association of American Geographers Annual Meeting*, Philadelphia, Pennsylvania.

- Manson, S. M. (2004). Boundedly rational land-use strategies and the local dimensions of human vulnerability and resilience in the Yucatán peninsula. *Proceedings of the 2004 Meeting of the Latin American Studies Association*. Las Vegas, Nevada [CD-ROM].
- Manson, S. M. (2003). Scale and complexity theory in the geography of global change. *Association of American Geographers Annual Meeting*, New Orleans, Louisiana.
- Manson, S. M. (2003). Projection of land-use/cover change in the southern Yucatan peninsular region of Mexico. School of Natural Resources and the Environment, University of Michigan.
- Manson, S. M. (2003). Uncommon futures: new ways of understanding and projecting future global environmental change. Department of Geography Kohn Colloquium and Center for Global and Regional Research, University of Iowa.
- Manson, S. M. (2003). Scale, complexity, and modeling: understanding the human dimensions of global change. Department of Geography, University of Minnesota.
- Manson, S. M. (2003). Scale, complexity, and modeling: understanding the human dimensions of global change. Center for Studies in Demography and Ecology, University of Washington.
- Manson, S. M. (2003). Adaptive integrated assessment of land use in Mexico. *Adaptive Research and Governance in Climate Change (ARGCC) Conference*. Ohio State University, Columbus, Ohio.
- Manson, S. M. (2002). Reconciling implications of complexity theory for modeling. *Association of American Geographers Annual Meeting*, Los Angeles, California.
- Manson, S. M. (2001). Simple and complex approaches to the projection of land-use/cover change. Center for the Study of Institutions, Population, and Environmental Change, University of Indiana.
- Manson, S. M. (2001). Agent-based approaches to understanding human-environment interactions. *National Academy of Science Colloquium on Adaptive Agents, Intelligence and Emergent Human Organization: Capturing Complexity through Agent-Based Modeling (LUCC Model Group)*. Irvine, California.
- Manson, S. M. (2001). Use of genetic programming to model land-manager decision making for environmental modeling. *Association of American Geographers Annual Meeting*, New York, New York.
- Manson, S. M. (2000). Agent-based dynamic spatial simulation of land-use/cover change in the Yucatan peninsula, Mexico. *Proceedings of the International Conference on Integrating GIS and Environmental Modeling (GIS/EM4): Problems, Prospects and Research Needs*. Banff, Alberta.
- Manson, S. M. (2000). Agent-based dynamic spatial simulation of land-use/cover change: methodological aspects. *University Consortium for Geographic Information Science Annual Meeting*, Portland, Oregon.
- Manson, S. M. (2000). Integrated assessment and agent-based approaches to land-use/cover change. Center for Integrated Study of the Human Dimensions of Global Change, Carnegie Mellon University.
- Manson, S. M. (1999). Simplifying complexity: complexity theory and global environmental change. *Association of American Geographers Annual Meeting*, Honolulu, Hawaii.
- Manson, S. M. (1999). Projection of land-use/cover change in the southern Yucatan peninsular region of Mexico. Department of Geography, Leeds University.
- Manson, S. M. (1999). Integrated assessment and projection of land-use/cover change in the southern Yucatan peninsular region of Mexico. International Centre for Integrative Studies, Maastricht University.
- Manson, S. M. (1999). Advances in the projection of land-use/cover change in the southern Yucatan peninsular region of Mexico. Center for Integrated Study of the Human Dimensions of Global Change, Carnegie Mellon University.
- Manson, S. M., S. J. Ratick, W. Jin and A. R. Solow (1998). Decision making and uncertainty: Bayesian assessment of the value of information. *Association of American Geographers Annual Meeting*, Boston, Massachusetts.

GRANTS

External Grants

- 2018 National Science Foundation Methodology, Measurement, and Statistics Program, Economics Program, Geography and Spatial Science Program, and Sociology Program (08/15/2018–07/31/2023). National Historical Geographic Information System (SES-1825768). S. M. Manson, E. Wrigley-Field, C. Fitch, and J. P. Schroeder (\$999,900). Creation, curation, and dissemination of harmonized data for 1940–2000, forming the largest publicly-accessible population database in the world.

- National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development (08/15/2018–08/15/2023). National Spatiotemporal Population Research Infrastructure (2R01HD057929-11). S. M. Manson, D. Van Riper, J. P. Schroeder, and T. Kugler (\$2,924,060). Creation, curation, and dissemination of harmonized human-environment data for 1790–2000 via the NHGIS, forming the largest publicly-accessible population database in the world. This grants extends the spatial and temporal extent of NHGIS as well as offering new data access tools with dissemination, training and outreach.
- 2017 National Science Foundation Sociology and Data Infrastructure Programs (09/01/17–02/28/22). RIDIR: IPUMS-Terra: Global Population and Agricultural Data (SMA-1738369). S. M. Manson, L. Cleveland, J. DeWaard, S. Ruggles, and L. Samberg (\$1,452,537). IPUMS Terra integrates, preserves, and disseminates data describing characteristics of the human population and the environment. This project incorporate data from over 1,000 population and agricultural censuses into IPUMS Terra.
- 2016 National Science Foundation Geography and Spatial Sciences; and Methodology, Measurement, and Statistics Program (08/15/2016–07/31/ 2017). Agent-Based Modeling 2017: The Usefulness, Uselessness, and Impending Tasks of Agent-Based Models in the Social, Human-Environment, and Life Sciences (SES-1638446). L. An, B. L. Turner II, P. Jankowski, S. M. Manson, and S. Wang (\$94,996). Workshop funding on agent based modeling.
- 2013 National Institutes of Health, Eunice Kennedy Shriver National Institute of Child Health and Human Development (09/01/2013–08/31/ 2018). National Spatiotemporal Population Research Infrastructure (2R01HD057929). S. M. Manson, S. Ruggles, J. Schroeder, D. Van Riper, W. Thomas (\$3,020,552). Creation, curation, and dissemination of harmonized human-environment data for 1790–2000, forming the largest publicly-accessible population database in the world.
- National Science Foundation Methodology, Measurement, and Statistics Program, and Department of Justice, Bureau of Justice Statistics (08/15/2013–07/31/ 2018). National Historical Geographic Information System (SES-1324875). S. M. Manson, J. Adams, C. Fitch. K. Genadek, S. Ruggles (\$869,999). Creation of metadata and statistics for harmonized US Census data for 1790–2000.
- National Institute of Child Health and Human Development, National Institutes of Health (09/01/2013–06/30/2018). *Integrated Samples of Latin American Censuses, 1960–2003 (2R01 HD044154-06)*. R. McCaa, D. Levison, S. M. Manson, S. Ruggles and M. Sobek. (\$2,024,345). Development of spatiotemporally continuous and harmonized census data and attendant research products for about 100 Latin American and Caribbean censuses.
- 2011 National Science Foundation (09/01/2011–08/31/2014). *CNH: Global Sensitivity and Uncertainty Analysis in the Evaluation of Social-Ecological Resilience: Theoretical Debate Over Infrastructure Impacts on Livelihoods and Forest Change (1114924)*. S. Perz, G. Kiker, and R. Muñoz-Carpena. (\$1,435,000). S. M. Manson is senior personnel. Assessing feedback between social and biophysical systems in the dynamics of deforestation and agriculture using social science, biophysical, and modeling methods.
- National Science Foundation (09/01/2011–12/31/2016). OCI: Terra Populus: A Global Population/Environment Data Network (0940818). S. Ruggles, V. Interrante, S. M. Manson, S. Shekhar, and J. Srivastava. (\$7,998,550). Integration, preservation, and dissemination of newly-available data describing the human population and environment on a global scale over the past two centuries.
- National Science Foundation (09/15/2011–08/31/2014). *School Attendance Boundary Information System (SABINS) (1123727)*. J Warren and S. M. Manson; Collaboration with NSF 1123894 (PI S. Saporito) (\$476,548). Integration and dissemination of harmonized school district boundaries and attendant computational statistical modeling.
- 2010 National Institute of Child Health and Human Development, National Institutes of Health (2/01/2010–1/31/2015). *Integrated Samples of Eurasian Censuses (R01HD047283)*. R. McCaa, S. Ruggles, M. Sobek, R. Assaad, D. Levison, and S. M. Manson (\$3,692,346). Creation of harmonized census data and attendant spatiotemporal research products for Eurasian censuses.
- 2008 National Institute of Child Health and Human Development, National Institutes of Health (07/01/2008–06/30/2013). *Integrated Samples of Latin American Censuses, 1960–2003 (R01 HD044154-06)*.

- R. McCaa, D. Levison, S. M. Manson, S. Ruggles and M. Sobek. (\$2,924,729). Development of spatiotemporally continuous and harmonized census data and attendant research products for about 100 Latin American and Caribbean censuses.
- 2007 National Science Foundation (09/01/2007–08/31/2012). BE/CNH: Understanding the Importance of Weak-Tie Networks in Complex Human-Environment Systems: Ecosocial Feedback in Multifunctional Agriculture (0709613). N. Jordan, S. M. Manson and K. Nelson. (\$924,273). Examining the importance of feedback between social and biophysical systems in the dynamics of multifunctional agriculture using social science, biophysical, and modeling methods.
- 2006 National Aeronautics and Space Administration, New Investigator Program in Earth-Sun System Science (08/01/2006–07/31/2010). North American Land Change: Integrated Research and Education on Decision Making in Coupled Human-Environment Systems (NNX06AE85G). S. M. Manson (\$343,383). Comparative study of the patterns, processes, and impacts of urbanization in the United States and deforestation in Mexico.
- 2004 National Science Foundation (09/01/2004–08/31/2006). BE/CNH: The Vulnerability and Adaptive Capacity of Coupled Human-Environment Systems in the Southern Yucatan Peninsular Region (BCS-0410016). B. L. Turner II and J. R. Eastman (\$149,684). S. M. Manson is senior personnel. Modeling land-use in the context of social and ecological systems in the Southern Yucatán Peninsular Region of Mexico.
- 2001 National Aeronautics and Space Administration (08/01/2001–07/31/2004). Land-Cover and Land-Use Change in the Southern Yucatan Peninsular Region: Refining Models and Projections of Deforestation with Application to the Carbon Cycle, Biotic Diversity and Regeneration Capacity, Sustainability and Vulnerability (NNG06GD98G). B. L. Turner II, J. Geoghegan, J. R. Eastman, D. Lawrence and H. Vester. (\$590,000). S. M. Manson is senior personnel. Validation of an agent-based model of land-use decision making in the context of social and ecological systems in the Southern Yucatán Peninsular Region of Mexico.
- National Academy of Science (08/15/2001). Agent-Based Approaches to Understanding Human-Environment Interactions (\$500). Travel grant for National Academy of Science Colloquium on Adaptive Agents, Intelligence and Emergent Human Organization: Capturing Complexity through Agent-Based Modeling, Irvine, California.
- 2000 University Consortium for Geographic Information Science (07/01/2000). Agent-Based Dynamic Spatial Simulation of Land-Use/Cover Change: Methodological Aspects (\$775). Travel grant for UCGIS Summer Meeting, Portland, Oregon.
- 1999 National Aeronautics and Space Administration (09/01/1999–08/31/2002). NASA Earth System Science Fellowship Integrated Assessment and Projection of Land-Use/Cover Change in the Southern Yucatan Peninsular Region of Mexico (ESS 99-0000-0008) (\$75,000). S. M. Manson. Development of an agent-based model of land-use decision making in the context of social and ecological systems in the Southern Yucatán Peninsular Region of Mexico.
- National Science Foundation (08/01/1999–07/31/2000). Doctoral Dissertation Research: Integrated Assessment and Projection of Land-Use/Cover Change in the Southern Yucatan Peninsular Region of Mexico (DDI 9907952). B. L. Turner II and S. M. Manson. Co-administered by the NSF Decision, Risk, and Management Science Program and the NSF Geography and Regional Science Program (\$6,000). Development of a joint cellular automata and agent-based model of land-use decision making in the context of social and ecological systems in the Southern Yucatán Peninsular Region of Mexico.
- Association of American Geographers (03/22/1999–03/28/1999). Simplifying Complexity: Complexity Theory and Global Environmental Change (\$200). Travel grant for Association of American Geographers Annual Meeting, Honolulu, Hawaii.

Student Doctoral Awards

- 2012 NSF Doctoral Dissertation Research Improvement Grant (J. Shannon, PhD student)
- 2010 NASA Earth and Space Science Fellowship (C. Crawford, PhD student)

NSF Doctoral Dissertation Research Improvement Grant (A. Berland, PhD student)

2008 Joseph L. Fisher Dissertation Fellowship (H. Sander, PhD student)

Internal Sources

2016 Scholar of the College, College of Liberal Arts (04/01/2016–03/30/2019). (\$30,000). The award provides funding from alumni donations to support faculty research for a three year period.

2015 U of M Informatics Institute On the Horizon Grant (01/09/2015–08/30/2016). “Desert in the Deluge: Gaps in the Big Data of Food, Energy, and Water” S. M. Manson and S. Shekhar (\$14,930). Research assistant support for food, energy, and water collaboration.

National Center for Advancing Translational Sciences of the National Institutes of Health (01/09/2015–08/30/2016). Spatiotemporal patterns of pneumococcal pneumonia in Minnesota (\$19,850). P-Y Iroh Tam, S. M. Manson, J. Michael Oakes, and L. Kne. Identifying spatial-temporal patterns of pneumococcal pneumonia disease incidence, morbidity and mortality in Minnesota.

Center for Educational Innovation, Office of the Senior Vice President for Academic Affairs and Provost (01/01/2015–09/3/2015). S. M. Manson, L. Kne, M. Kernik, L. Matson, and E. DeLuca. Creation of mapping infrastructure, curriculum templates, and online materials for spatial thinking.

Partnership for Affordable Content program, University Libraries (01/01/2015–09/3/2015). S. M. Manson, L. Kne, M. Kernik, L. Matson, and E. DeLuca. Development of open-access mapping materials.

Faculty Sabbatical Supplement, College of Liberal Arts, University of Minnesota (08/25/2015–05/29/2016). Deserts in the deluge: improving big data for human-environment systems. S. M. Manson (\$31,800). Working on the big data for human-environment issues with funding from DOJ, NIH, and NSF.

C3= Curiosity, Community, Collaboration Grant, College of Science and Engineering and the College of Liberal Arts (01/20/2015–12/30/2015). Spatial Computing Colloquium. S. M. Manson and S. Shekhar (\$300). Honorarium support for a guest speaker and minisymposium on spatial computing.

2014 Infrastructure Investment Initiative, Office of the Provost and the Center for Educational Innovation (12/19/2014–08/30/2015). Mapping and Experiments in Innovation. S. M. Manson, L. Kne, M. Kernik, L. Matson, and E. DeLuca (\$18,354). Creation of mapping infrastructure, curriculum templates, and online materials for spatial thinking.

2011 Infrastructure Investment Initiative, Office of the Vice President for Research (07/01/2011–06/30/2016). U-Spatial: Spatial Sciences and Systems Infrastructure. F. Harvey, M. Bauer, J. Foley, S. M. Manson, S. Ruggles, and S. Shekhar. (\$2,520,000). Creation of research infrastructure to coordinate equipment and services for the University research community working with spatial information.

2010 Discovery Grant, Institute on the Environment, University of Minnesota (10/01/2010–09/30/2012). Connecting Land, People and Water in the Urban Environment. S. Hobbie, K. Nelson, C. Schively Slotterback, L. Baker (\$400,000). S. M. Manson is senior personnel. Analysis of population-environment dynamics of local landscapes via modeling and field research.

2009 Resident Fellowship, Institute on the Environment, University of Minnesota (05/01/2009–04/30/2012). Population-environment dynamics of global landscapes S. M. Manson (\$60,000). Analysis of population-environment dynamics of global landscapes.

Minnesota Futures Grant Program, Office of the Vice President for Research (10/01/2009–08/31/2010). Blueprint for a Green, Healthy, and Livable Future: A symposium on transdisciplinary research in policy, planning, engineering, health, law, and humanities. G. Lindsey, Y. Fan and J. Cao (\$25,000). S. M. Manson is a co-investigator. Developing and hosting a symposium on designing sustainable urban spaces.

Minnesota Futures Research Grant Program, Office of the Vice President for Research (01/01/2009–08/31/2011). Managing Cumulative Effects of Land-Use Change on Water Resources in a Dynamic, Urbanizing Landscape: A Communicative / Systemic Approach. N. Jordan, D. Pitt, C.

Schively-Slotterback, D. Mulla, L. Schmitt Olabisi, J. Salter, B. Karkkainen, S. M. Manson, S. Polasky, K. Draeger, G. Murdoch, J. Coleman and B. Stenquist (\$100,000). Modeling land use effects on water resources in the Minnesota River Basin.

CLA Course Transformation Program, College of Liberal Arts, University of Minnesota (03/01/2009–09/01/2010). Complexity of Metropolitan Life. B. Kayzar and S. M. Manson (\$12,000). Introducing web mapping into Urban Studies course The Complexity of Metropolitan Life.

2008 Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (01/01/2008–08/31/2008). Minnesota Interactive Mapping Project. S. M. Manson and B. Kayzar (\$17,354). The Minnesota Interactive Internet Mapping (MIIM) Project is an internet mapping application that supports courses across the U of M curriculum and in K12 environmental education.

Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (03/01/2008). Minnesota Interactive Mapping Project: Server Upgrade. S. M. Manson (\$4,089). New blade server for the Minnesota Interactive Internet Mapping (MIIM) Project (above).

Synthesis Grant, Institute on the Environment, University of Minnesota (02/10/2008–12/31/2008). Integrating Sustainability Science and Design in Participatory Land Use Planning and Implementation. L. Johnson, A. Kapuscinski, B. Karkkainen, D. Mulla, L. Neckar, S. Polasky, E. Wilson, J. Abrams, K. Draeger, N. Jordan, S. M. Manson, D. Pitt, P. Reich and D. Wyse (\$100,000). Developing comprehensive concepts and tools to evaluate the broad impacts of land-use change of the Upper Mississippi Basin.

Office of the Senior Vice President for Academic Affairs and Provost, University of Minnesota (04/01/2008–12/31/2008). The Minnesota Interactive Mapping Project. S. M. Manson and B. Kayzar (\$10,000). Expansion of the Minnesota Interactive Internet Mapping (MIIM) Project.

Faculty Sabbatical Supplement, College of Liberal Arts, University of Minnesota (08/25/2008–05/29/2009). Nature, causes, and impacts of changing landscapes in the United States and Mexico. S. M. Manson (\$24,600). Working on modeling the changing landscapes of United States and Mexico with funding from NASA and NSF.

Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (09/01/2008–04/31/2009). Expanding Minnesota Interactive Mapping Project. S. M. Manson and B. Kayzar (\$17,497). Expanding the scope Minnesota Interactive Internet Mapping (MIIM) Project (above).

Community Growth Options, Center for Urban and Regional Affairs (06/01/2008–04/31/2009). Municipal Growth and Development Toolkit. B. Kayzar and S. M. Manson (\$17,937). Developing community planning scenarios for periurban development.

Minnesota Futures Grant Program, Office of the Vice President for Research (08/01/2008–08/31/2009). Exploring Spatio-temporal Future of Geo-Informatics: A symposium to identify challenges, knowledge-gaps, and transformational opportunities. S. Shekhar and F. Harvey (\$25,000). S. M. Manson is a co-investigator. Developing and hosting a symposium that will conduct preliminary research for a larger grant.

2007 Office for Public Engagement, University of Minnesota (01/01/2007–05/31/2007). Strengthening Public Engagement Through a Web-Based Curriculum on Spatial Thinking in Environmental Education. S. M. Manson and A. M. McDowell (\$5,000). Creating a web-based curriculum that blends spatial thinking and environmental education for middle and high school students in the Twin Cities

Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (08/01/2006–07/31/2007). Minnesota Interactive Mapping Project. S. M. Manson (\$8,421). The Minnesota Interactive Internet Mapping (MIIM) Project is an internet mapping application that supports U of M courses.

Minnesota Population Center Faculty Proposal Development Grant, University of Minnesota (04/01/2007–10/31/2007). Development and Application of a Twin Cities Geographic Dataset for Population Research. S. M. Manson, M. Oakes and M. Orfield (\$24,748). Development and application of a fine-scaled geographic data set and methods for linking community health and school segregation to land use.

- 2006 McKnight Land-Grant Professorship, University of Minnesota (07/01/2006–06/30/2008). Nature, Causes, and Impacts of Changing Urban and Rural Landscapes S. M. Manson (\$60,000, year-long research leave, two year's summer salary). Spatial analysis of land change for urban sprawl in the Twin Cities of Minnesota and deforestation in the Southern Yucatán Peninsular Region of Mexico.
- Grant-In-Aid Of Research, Artistry and Scholarship, Office of the Dean of the Graduate School, University of Minnesota (01/01/2006–06/15/2007). Does Sprawl Beget Sprawl? Urbanization in the Twin Cities of Minnesota, 1990–2005 S. M. Manson (\$23,924). Statistical analysis of spatial interactions among neighboring land parcels and their influence on urban sprawl in the Twin Cities of Minnesota.
- Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (08/01/2006–07/31/2008). Spatializing the Undergraduate Curriculum. S. McMaster, S. M. Manson and R. B. McMaster (\$62,100). Provision of a full-time Instructional Technology Fellow to build an online repository of Geographic Information Science materials for social, biophysical, and information courses.
- Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (05/11/2006–08/01/2006). Geographic Information Science Modules. S. M. Manson and M. Lindberg (\$5,433). Creation of learning modules in GIS and spatial modeling.
- 2005 Intercollegiate Research Network, University of Minnesota (06/15/2005–06/15/2006). Testing a Novel Mechanism for Sustainable Development of Agriculture. N. Jordan, S. M. Manson and K. Nelson (\$10,000). Development of modeling framework and pilot graduate curricula for linking research and civic work for issues in agriculture and sustainable development.
- Minnesota Population Center Development Grant, University of Minnesota (05/15/2005–08/01/2005). Land Change in the Southern Yucatan Peninsular Region of Mexico: Linking Household Decision Making to Social and Ecological Systems. S. M. Manson (\$9,051). Development a large-scale research design for tying smallholder agriculturalists to ecosystems and social systems using geospatial technologies.
- Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (05/01/2005–08/01/2006). Expansion of Blegen 440 to Meet CLA Requirements for Course Section Enrollments. S. M. Manson (\$8,100). Expansion of computer laboratory.
- Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (05/23/2005–08/01/2005). Rationalizing and Harmonizing Lab Exercises for GIS and Cartography. M. Lindberg, M. Galanda and S. M. Manson (\$6,560). Design of new cross-course lab exercises in GIS and cartography.
- 2004 Faculty Interactive Research Program, Center for Urban and Regional Affairs, University of Minnesota (06/15/2004–01/01/2006). Assessing and Forecasting Land Use and Land Cover Change in the Twin Cities Metropolitan Area. M. Bauer and S. M. Manson (\$40,673). Identifying growth scenarios tied to socioeconomic forecasts and the role of policy instruments and creating land use and land cover maps for gauging the socioeconomic and environmental effects of growth.
- Faculty Summer Research Fellowship Program, College of Liberal Arts, University of Minnesota (06/15/2004–08/01/2004). Global Environmental Change: Local Dimensions of Human Vulnerability and Resilience in Mexico. S. M. Manson (\$5,000). Examining land-use decision making with respect to institutions in the Southern Yucatán Peninsular Region of Mexico.
- 2003 Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (04/15/2003–08/01/2006). Mobile Wireless Laptop Lab Improvement of Access to Computing Facilities. S. M. Manson and F. Harvey (\$47,000). Design and implementation of a mobile wireless laptop laboratory.

TEACHING AND CURRICULUM DEVELOPMENT

Courses Taught

Chief instructor. *University of Minnesota, Minneapolis, MN* (2002 – date).

- Geography 1502: Mapping Our World (Lecture/Lab)
- Geography 3561: Principles of Geographic Information Systems (Lecture/Lab)
- Geography 5561: Principles of Geographic Information Systems (Lecture/Lab)
- Geography 5562: Analytical Cartography (Lecture/Lab)
- Geography 5563: Advanced Geographic Information Science (Lecture/Lab)
- Geography 5565: Geographical Analysis of Human-Environment Systems (Lecture/Lab)
- Geography 8292: Spatial Analysis and Modeling (Seminar)
- Geographic Information Science 5555: Basic Spatial Analysis (Lecture/Lab)

Guest lecturer. *University of Minnesota, Minneapolis, MN*.

- Geog 1502: Maps and visualization (2005–2008)
- Geog 8001: Problems in Geographic Thought (2006–2014)
- Geog 8002: Research Methods in Geography (2006–2014)
- Geog 3001: Introduction to Biology, Society and Environment (2011)
- GIS 8501: Master of GIS Seminar (2006–2008)
- HSem 1001: Honors Freshman Seminar: Introduction to the Arts and Sciences (2004–2006)
- WRS 8100: Seminar in Water Resources (2004–2005)

Graduate Directed Studies

2016	B. Liang. Web mapping and programming. [3cr Geog 8990 Research Problems]
2010	J. Shannon. Spatial Analysis. [3cr Geog 8990 Research Problems]
2008	S. Eria. Spatial Analysis and Modeling. [3cr Geog 8990 Research Problems] K. Walker. Population Data and Modeling. [3cr Geog 8990 Research Problems]
2007	C. Cottingim. Examination of an implementation of the UCGIS Body of Knowledge for GISc [1cr GIS 8990 Research Problems] T. Swanson. Developing a K-12 web mapping tool to assist in teaching Geographic Information Systems (GIS) [3cr GIS 8990 Research Problems] R. Koehnen. NHGIS census database generalization [3cr GIS 8990 Research Problems]
2006	L. Bergmann. Markov-chain analysis of land change [3cr Geog 8990 Research Problems] B. Lagerquist. GIS Internship [3cr Geography 3994 Directed Research] T. Swanson. Agent-based models and GIS [3cr GIS 8990 Research Problems] D. Trexel. Characterization of spatial patterns and temporal trends in fish mercury levels for inland lakes of Minnesota, Wisconsin and Michigan (1967-2005) [3cr GIS 8990 Research Problems]
2005	R. Colwell. Measuring quality of life with geographic information systems: moving beyond part one crimes [3cr GIS 8990 Research Problems] J. Chen. Analysis of water quality complaints in St. Paul water distribution system using GIS [3cr GIS 8990 Research Problems] H. Dittrich. A review of GIS applications in the field of archaeology [3cr GIS 8990 Research Problems] P. Wickman. Development of a centralized spatial database prototype using the ESRI ArcSDE platform [1cr GIS 8990 Research Problems]
2004	R. Koehnen. GIS Software development using .NET and ESRI ArcObjects: a case study of the NHGIS census database generalization software development process [3cr GIS 8990 Research Problems]

Teaching Evaluations

Evaluations 2002 – 2007

Course/ Semester	Scores (Mean/Median on 0–7 scale)					Class size
	Teaching ability	Expertise	Respected Students	Physical environment	Amount learned	

Geog 5562	F02	6.5/6.6	6.8/6.9	6.8/6.9	5.4/5.1	6.0/6.0	12
Geog 8292	S03	6.4/6.6	6.7/6.8	6.6/6.7	4.9/4.5	5.1/5.3	20
Geog 5565	S03	6.4/6.6	6.5/6.7	6.5/6.7	5.6/5.5	5.8/6.1	16
Geog 5561	F03	5.8/6.0	6.4/6.7	6.2/6.4	4.7/4.5	4.8/5.0	33
Geog 3561	F03	6.4/6.4	6.7/6.8	6.4/6.7	5.7/5.9	5.5/5.6	49
Geog 5562	S04	6.4/6.6	6.6/6.7	6.8/6.9	4.7/4.8	5.2/5.2	18
Geog 8292	S04	6.2/6.2	6.7/6.8	6.5/6.8	6.0/6.1	5.7/5.8	11
Geog 5561	F04	6.4/6.6	6.5/6.6/	6.4/6.6	5.2/5.1	5.2/5.2	24
Geog 3561	F04	6.6/6.8	6.9/6.9	6.7/6.8	5.9/6.0	5.8/6.0	55
Geog 5565	S05	6.2/6.3	6.7/6.8	6.5/6.8	5.4/5.4	5.9/6.1	15
Geog 8292	S05	6.2/6.3	6.6/6.2	6.2/6.2	5.7/5.8	5.7/5.8	21
Geog 5561	F05	6.7/6.8	6.7/6.8/	6.7/6.8	5.6/5.4	5.6/5.4	26
Geog 3561	F05	6.6/6.7	6.7/6.8	6.6/6.7	5.4/5.6	5.5/5.7	52
Geog 5565	S06	6.5/6.8	6.8/6.9	6.5/6.8	5.3/5.3	5.9/6.6	22
Geog 8292	S06	6.5/6.7	6.9/7.0	6.5/6.7	5.5/5.8	6.2/6.4	14
Geog 8292	S07	6.5/6.7	6.9/6.9	6.7/6.8	6.1/6.1	5.7/5.9	16
Geog 5563	S07	6.6/6.7	6.7/6.8	6.6/6.8	5.0/5.0	5.9/6.0	31
Geog 8292	F07	6.6/6.7	6.8/6.8	6.5/6.5	5.6/5.5	5.6/5.5	15
Geog 5565	F07	5.8/5.9	6.5/6.7	6.1/6.6	5.7/5.9	5.0/5.1	26

Evaluations 2008 – 2015

Course/ Semester	Scores (Mean/Median on 0–6 scale)							
	Instructor prepared	Presented Clearly	Effective feedback	Respected Students	Increased knowledge	Stimulated interest		
GIS 5555	F09	5.2/5.0	4.9/5.0	5.3/6.0	5.8/6.0	5.0/5.0	5.0/5.0	15
Geog 8292	F09	5.2/5.0	4.9/5.0	5.3/5.5	5.7/6.0	5.4/6.0	5.5/5.5	18
Geog 5565	S10	5.7/6.0	5.5/6.0	5.8/6.0	5.8/6.0	5.6/6.0	5.2/6.0	15
Geog 8292	S10	5.3/6.0	5.1/6.0	5.3/6.0	5.3/6.0	5.0/5.5	5.0/5.5	18
Geog 1502	F10	5.7/6.0	5.3/6.0	5.8/6.0	5.7/6.0	4.9/5.0	4.1/4.0	24
GIS 5555	F10	5.7/6.0	5.4/5.5	5.7/6.0	5.9/6.0	5.7/6.0	5.4/5.5	13
Geog 8292	S11	5.8/6.0	5.4/5.0	5.8/6.0	5.8/6.0	5.8/6.0	6.0/6.0	18
Geog 1502	F11	5.8/6.0	5.6/6.0	5.5/6.0	5.8/6.0	5.5/6.0	5.1/5.5	120
GIS 5555	F11	5.6/6.0	5.9/6.0	5.9/6.0	6.0/6.0	5.8/6.0	5.8/5.0	19
Geog 1502	F12	5.7/6.0	5.7/6.0	5.7/6.0	5.8/6.0	5.6/6.0	5.4/6.0	199
GIS 5555	F12	5.2/5.0	5.2/5.0	5.0/5.0	5.3/5.0	5.8/6.0	4.8/5.0	9
Geog 1502	F13	5.8/6.0	5.8/6.0	5.8/6.0	5.8/6.0	5.7/6.0	5.4/6.0	136
Geog 5565	F13	5.8/6.0	5.8/6.0	5.8/6.0	5.8/6.0	5.6/6.0	5.7/6.0	18
Geog 1502	F14	5.8/6.0	5.8/6.0	5.7/6.0	5.8/6.0	5.6/6.0	5.3/6.0	138
GIS 5555	F14	5.6/6.0	5.0/6.0	5.2/6.0	5.9/6.0	5.6/6.0	5.0/6.0	24

Evaluations 2016 – date

Course/ Semester	Scores (Mean/Median on 0–6 scale)									n	
	Instructor prepared	Presented Clearly	Effective feedback	Respected Students	Recommend instructor?	Deeper understanding	Stimulated interest	Clear grading	Recommend course?		
Geog 1502	F16	5.8/6.0	5.8/6.0	5.8/6.0	5.8/6.0	5.9/6.0	5.6/6.0	5.0/6.0	5.8/6.0	5.8/6.0	124
Geog 1502	F17	5.7/6.0	5.8/6.0	5.6/6.0	5.7/6.0	5.7/6.0	5.5/6.0	5.2/6.0	5.7/6.0	5.6/6.0	400

Curriculum and Pedagogical Development

Partnership for Affordable Content program, University Libraries. S. M. Manson, L. Kne, M. Kernik, L. Matson, and E. DeLuca. Development of open-access mapping materials. 2015–2018

Center for Educational Innovation, Office of the Senior Vice President for Academic Affairs and Provost. S. M. Manson, L. Kne, M. Kernik, L. Matson, and E. DeLuca. Creation of mapping infrastructure, curriculum templates, and online materials for spatial thinking. 2015–2017

Center for Writing Teaching with Writing Community Program. Presented “Mapping in the Classroom” for Using Technology in Writing Instruction Panel	2015
Via funding from the Office of the Provost and the Center for Educational Innovation, creation of mapping infrastructure, curriculum templates, and online materials for spatial thinking (with L. Kne, M. Kernik, L. Matson, and E. DeLuca).	2014–date
Developed the department’s undergraduate curriculum and acquired funding for a full-time Instructional Technology Fellow to build an online repository of Geographic Information Science materials for social, biophysical, and information courses. Funded by the Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (with S. McMaster and R. B. McMaster).	2007–2008
Acquired funding for, and developed lab exercises in, spatial cognition and cartography for use in several undergraduate and graduate classes. Funded by the Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (with M. Lindberg).	2006–2007
Developed Maps@UMN, an online mapping application for use by K-12 and University courses, the Minnesota Interactive Internet Mapping project. Funded by the Information Technology Fees Committee, College of Liberal Arts; and Technology Enhanced Learning, Office of the Senior Vice President for Academic Affairs and Provost, University of Minnesota (with B. Kayzar).	2007–2013
Acquired funding for and developed a new course <i>Engaging Research and Scholarship in Sustainable Development: The Worldview Challenge</i> . Funded by the Intercollegiate Research Network, University of Minnesota (with N. Jordan and K. Nelson).	2005–2007
Acquired funding for and developed new lab exercises in GIS and cartography for use in several undergraduate and graduate classes. Also designed self-directed learning exercises in GIS for faculty, graduate students, and undergraduates. Funded by the Information Technology Fees Committee, College of Liberal Arts, University of Minnesota (with M. Lindberg and M. Galanda).	2005–2006
Led development of the University’s Undergraduate Minor in Geographic Information Science. This involved working with colleagues in five departments in three colleges to plan and implement the minor.	2007
Participated in the University of Minnesota <i>Early Career Teaching Program: Pursuing Excellence in Multicultural Education</i> . Year-long program on teaching, including large group meetings, small group workshops, and in-class peer evaluation.	2003–2004

ADVISING AND MENTORING

Undergraduate Students

2015	M. Turnure, Measuring the Impact of Labor Unions on Social Indicators
2014	I. McCormac. Hurricane Effects on the Outer Banks. I. Glover. Suitability Analysis for Convenience Store Locations in Anoka County Minnesota J. Krenzelok. Spatial Analysis of Glacier Threats to Human Settlements B. Berger. Spatial Analysis of Human Systems
2010	C. Horgan, BA
2009	I. Potapenko, BSc
2007	J. Neilson. GIS Internships J. Neilson. GIS for location planning
2006	B. Lagerquist. GIS Internship

Graduate Students

Doctoral Dissertations Directed

- In progress M. Bakhtsiyarava, PhD Geography
 C. Cervantes De Blois, PhD Geography
 T. Host, PhD Natural Resources
 M. Kernik, PhD Geography
 B. Krzyzanowski, PhD Geography
 B. Runck, PhD, Geography
- 2016 D. Bonsal, PhD, Geography (Asst prof, James Madison University). Local in space and time: Acoustic environmental policy in Minnesota and a fine-scale spatiotemporal representation of aircraft noise impact on residential life.
- 2013 C. Crawford, PhD Geography (Postdoc, NASA Goddard). Assessing Historical Trends in Snowpack Variability across the Northern Rocky Mountains using Remote Sensing and Dendrochronology Approaches.
 J. Shannon, PhD Geography (Asst prof, University of Georgia). Rethinking food deserts: the practice and politics of food access.
- 2012 A. Berland, PhD, Geography (Asst prof, University of Miami, now Ball State University). Twin Cities urbanization and implications for urban forest ecosystem services.
- 2009 D. Ghosh, PhD Geography (Asst prof, Kent University, now University of Connecticut). A Geospatial Analysis of West Nile Virus in the Twin Cities Metropolitan Area of Minnesota.
 H. Sander, PhD Conservation Biology (EPA Postdoc, now Asst prof, University of Iowa). What's It Worth? Improving Land Use Planning Through The Modeling And Economic Valuation of Ecosystem Services.
 S. Sun, PhD Geography (Asst prof, University of Waterloo, now Hunter College, SUNY). Intraurban Migration in the Twin Cities Metropolitan Area of Minnesota.

Doctoral Committees

- In progress L. Alarabi, PhD Computer Science
 R. Anoszko, PhD Natural Resources Management
 M. McClellan, PhD Plant Sciences
 M. Silisyene, PhD Conservation Biology
 M. Snow, PhD Geography
- 2016 A. Eldawy, PhD Computer Science
 R. Noe, PhD Natural Resources
- 2015 Y. Huang, PhD Civil Engineering
- 2014 R. van Duinen, PhD Economics, U of Twente
- 2013 E. Fairley, PhD Geography
 B. Keeler, PhD Conservation Biology
 K. McDonald, PhD Epidemiology
- 2012 L. Bergmann, PhD Geography
 S. Eria, PhD Geography
 E. Fairley, PhD Geography
 R. Coil, PhD Anthropology
- 2011 P. Nagalla, PhD Computer Science

	E. Nikoi, PhD Geography K. Walker, PhD Geography
2010	B. Lee, PhD Epidemiology C. William, PhD Geography J. Menard, PhD Anthropology J. Schmidt, PhD Conservation Biology
2009	R. Kirk, PhD Natural Resources H. Kushnir, PhD Conservation Biology C. Hao, PhD Geography, Clark University
2008	M. Wieland, PhD Conservation Biology
2007	J. Nienow, PhD Anthropology
2005	H. Lu, PhD Biostatistics

Master's Student Advisees

2016	B. Liang, MA Geography
2014	B. Johnston, MGIS
2012	N. Alphonse, MGIS Z. Tagar, MGIS
2011	H. Hegi, MGIS T. Juntunen, MGIS B. Morris, MGIS
2010	B. Behling, MGIS E. Olson, MGIS
2009	C. Cottingim, MGIS L. Kne, MGIS (Best Graduate Student Paper MN GIS/LIS) E. Olson, MGIS
2008	J. Lind, MGIS J. Thyen, MGIS
2007	N. Mishra, MGIS (Awarded 2006 ESRI Student Assistantship) R. Koehnen, MGIS J. Hamilton, MGIS J. Menard, MGIS (UMN Graduate MN GIS/LIS Scholarship Award) R. Rye, MGIS D. Sather, MGIS Z. Song, MGIS T. Swanson, MGIS P. Wickman, MGIS
2006	R. Colwell, MGIS H. Dittrich, MGIS E. Myott, MGIS C. Riley, MGIS
2005	C-Y Chen, MGIS J. Engels, MGIS (Best Graduate Student Paper MN GIS/LIS)
2004	H-F Chang, MGIS B. Mueller, MGIS

V. Thomas, MGIS

M. Vavra, MGIS

2003 S. Rane, MGIS (Best Graduate Student Paper MN GIS/LIS)

SERVICE AND PUBLIC OUTREACH**Professional Service*****Employment***

Software Developer, Microsoft Corporation, Redmond, Washington	1996
Research Analyst, Ministry of Health, Victoria, Canada	1994
Project Analyst, Ministry of Energy and Mines, Victoria, Canada	1992–1993

Organizations

Member, Council of Colleges of Arts & Sciences	2017–date
Member, Population Association of America	2011–date
Lifetime Member, Association of American Geographers	1996–date
Member, American Society for Photogrammetry and Remote Sensing	1996–date

Disciplinary Service***Editing***

Environmental Modelling and Software, Elsevier. Editorial Board Member (2013-2016).
 GIScience and Technology Volume, International Encyclopedia of Geography, Wiley. Section Editor (2011-date).
 Geography Compass, Blackwell. Editorial Board Member (2006-date).

Journal Reviewing

Agriculture, Ecosystems and Environment	2013–2014
Annals of the Association of American Geographers	2002–2012
Applied Geography	2010–2011
Cartographic Perspectives	2017–2018
Computers, Environment and Urban Systems	2003–2016
Ecological Economics	2005–2014
Ecology and Society	2005–2015
Environment and Planning A	2004–2012
Environment and Planning B	2004–2011
Environmental Management	2002–2011
Environmental Modelling and Software	2008–2015
Geographical Analysis	2009–2011
Geography Compass	2008–2009
Geoforum	2002–2011
Geoinformatica	2005–2018
International Journal of Geographic Information Science	2002–2018
Journal of Ecological Economics	2012–2014
Journal of Environmental Management	2006–2014
Journal of Geography	2018–2019
Journal of Land Use Science	2005–2016
Journal of Management Studies	2002–2003

Journal of Planning Literature	2009–2011
Journal of Regional Science	2005–2006
Landscape Ecology	2005–2016
Land Use Planning	2006–2017
Photogrammetric Engineering and Remote Sensing	2002–2003
PLoS ONE	2016–2017
Proceedings of the National Academy of Sciences	2016–2017
Professional Geographer	2007–2008
Population and Environment	2008–2009
Progress in Human Geography	2002–2010
Remote Sensing of the Environment	2004–2011
The Canadian Geographer	2016–2017
Transactions in Geographic Information Science	2011–2018
Transactions of the Institute of British Geographers	2003–2011

Committee Memberships

Newsletter Editor, Spatial Analysis and Modeling Specialty Group, AAG	2005–2007
Board Member, Spatial Analysis and Modeling Specialty Group, Association of American Geographers	2005–2009
Board Member, Scientific Freedom and Responsibility Committee, Association of American Geographers	2005–2008
Member, Research Committee, University Consortium for Geographic Information Science	1999–2005
University Delegate, University Consortium for Geographic Information Science	1999–2001

Review panels for external funding agencies, foundations, publishers, and departments

California Energy Commission's Global Climate Change Grant Program	2004–2005
CRC Press / Taylor and Francis Press	2010–2011
Center for Complexity Science, Israel	2008–2009
Environmental Protection Agency, Global Change Research Program	2008–2009
Environmental Protection Agency, US-Mexican border region	2005–2006
Environmental Protection Agency, STAR Fellowship Program	2011–2012
National Aeronautics and Space Administration, Program in Earth System Sciences	2004–2006
Estonian National Science Foundation	2011–2012
National Institutes of Health, Population Sciences and Epidemiology	2011–2014
National Institutes of Health, Systems Science and Health in the Behavioral and Social Sciences	2014–2016
National Science Foundation, Anthropology Program	2006–2007
National Science Foundation, Economics Program	2004–2005
National Science Foundation, Geography and Spatial Sciences Program	2004–2016
National Science Foundation, Advanced Computing Initiatives	2014–2016
National Science Foundation, Office of International Science and Engineering	2017–2018
Natural Sciences and Engineering Research Council of Canada Discovery Grant Program	2011–2014
Social Sciences and Humanities Research Council of Canada Grant Program	2003–2004
Swiss National Science Foundation, Sinergia Grant Program	2015–2016

Review panels for promotion and tenure cases

Reviewer, Case for promotion to Associate Librarian (2 cases)	2009–2017
Reviewer, Case for promotion to Associate Professor (11 cases)	2009–2017
Reviewer, Case for promotion to Full Professor (2 cases)	2016–2017

Organization of Conferences, Workshops, Panels, Symposia

Member, Program Committee of the Symposium on CyberGIS and Spatial Data Science, New Orleans, Louisiana	2017–2018
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Member, Program Committee of the Third International Conference on CyberGIS and Geodesign (CyberGIS'16)	2015–2016
Paper Session Chair, Well-being, Healthy Cities and Quality of Life, Association of American Geographers Annual Meeting, Chicago, Illinois.	2015
Paper Session Discussant, New Directions in Geospatial Simulation, Association of American Geographers Annual Meeting, Chicago, Illinois.	2015
Member, Program Committee of the Second International Conference on CyberGIS and Geodesign (CyberGIS'14)	2014–2015
Member, Program Committee for the Population Association of America Meeting, San Diego, California	2014–2015
Paper Session Co-organizer for session, How can we make ABM more relevant?, Association of American Geographers Annual Meeting, Tampa, Florida (with T. Evans, D. O'Sullivan)	2014
Paper Session Co-organizer and Chair for two sessions, Land Systems Science Symposium: Panel on LUCC-ABM, Association of American Geographers Annual Meeting, Los Angeles, California (with T. Evans, D. O'Sullivan, R. Aspinall)	2013
Paper Session Co-organizer and Chair for session Geographic Complexity: Agent Based Models and Sustainability Science, Association of American Geographers Annual Meeting, Washington, District of Columbia (with T. Evans and A. Ligmann-Zielinska)	2009–2010
Paper Session Co-organizer and Chair for two sessions, Perspectives on Geographic Complexity, Association of American Geographers Annual Meeting, San Francisco, California (with T. Evans)	2007
Paper Session Co-organizer and Chair for four sessions, Perspectives on Geographic Complexity, <i>Association of American Geographers Annual Meeting</i> , Denver, Colorado (with T. Evans, D. Parker and P. Torrens)	2005
Paper Session Chair, Geographical Perspectives on Change in Mexico, <i>Meeting of the Latin American Studies Association</i> , Las Vegas, Nevada	2004
Paper Session Co-organizer and Chair for three sessions, Geographical Perspectives on Complex Systems, <i>Association of American Geographers Annual Meeting</i> , Philadelphia, Pennsylvania (with T. Crawford, J. Messina and D. O'Sullivan)	2004
Paper Session Co-organizer and Chair for three sessions, Geographical Perspectives on Complexity Theory and Complex Systems, <i>Association of American Geographers Annual Meeting</i> , New Orleans, Louisiana (with T. Crawford and J. Messina)	2003
Paper Session Organizer and Chair for three sessions, Agent Based Modeling of Human-Environment Interaction, <i>Association of American Geographers Annual Meeting</i> , Los Angeles, California	2002
Workshop Co-organizer. <i>Meeting the Challenge of Complexity: Special Workshop on Agent-Based Models of Land-Use/Land-Cover Change</i> , National Academy of Sciences, Irvine, California	2002
Panel Session Organizer and Chair, Degrees of Freedom: Finding Work in Academia, <i>University Consortium for Geographic Information Science Summer Meeting</i> , Buffalo, New York	2001
Paper Session Chair, GIS and Environmental Modeling, <i>Association of American Geographers Annual Meeting</i> , New York, New York	2001

University Service

University-wide

Chair, Council of Research Associate Deans	2018–2019
Member, Professional Education Council	2016–date
Member, Council of Research Associate Deans	2016–date
Chair, U-Spatial Advisory Board	2016–date
Member, OVPR Budget Advisory Board	2016–date
Speaker for professional development for the MPC Diversity Fellowship Program	2016–date
Member, Office of Vice President for Research Serendipity Team	2016–2018
Speaker and faculty resource, CLA Sneak Preview Summer Series	2014–date
Faculty Evaluation Committee of the Graduate Faculty in Population Studies	2016–date
Chair, U of M Spatial Sciences and Systems Infrastructure Advisory Board	2016–date

Director, U of M Spatial Sciences and Systems Infrastructure	2015–2016
Member, CLA's Student Academic Affairs Committee	2008–date
Member, Advisory Board, Spatial Analysis Core	2008–date
Member, Council on Liberal Education, UMN	2014–2016
Member, Provostal cluster hire in demography	2010–2012
Cofounder, U of M Spatial Sciences and Systems Infrastructure	2010–2015
Member, University Metropolitan Consortium	2009–2013
Member, Advisory Board, Minnesota Population Center	2008–2013
Member, Geospatial Consortium	2008–2012
Member, Minnesota Research Data Center Coordinating Committee	2008
Reviewer, Case for promotion to Associate Librarian	2008
Interviewed for U of M's "Driven to Discover" marketing campaign	2007
Speaker and faculty resource, Ronald E. McNair Post Baccalaureate Achievement Program for increasing graduate school enrollment by traditionally underrepresented groups, UMN	2007
Member, Undergraduate Minor In Geographic Information Science Advisory Board	2006–date
Member, Provost's committee to establish Interdisciplinary Undergraduate Minor in Geographic Information Science, UMN	2005–2007
Faculty Sponsor, Geographic Information Science Student Organization, UMN	2004–2007
Worked with College of Liberal Arts and College of Architecture and Landscape Architecture development officers to develop proposals and meet with potential donors	2004–2005
Member, Technology Enhanced Learning Small Grant Program Review Committee, UMN	2002–2003
Discussant, Climate Change and Sustainable Development Workshop Series, Center for Science, Technology, and Public Policy, Humphrey School of Public Affairs, UMN	2003

Collegiate Service and Intercollegiate Service

Member, Scholastic Appeals Committee, College of Liberal Arts	2012–date
Member, Scholarships Review Committee, College of Liberal Arts	2014–date
Interviewed for CLA's "Reach" magazine for the article "The Scientific Mystique"	2007
Interviewed for CLA's "Minnesota Geographer" magazine for the article "MGIS program"	2007
Interviewed for CLA's "Minnesota Geographer" magazine for the article "Topical Geography"	2006
Representative, College of Liberal Arts Assembly, UMN	2004–2006
Member, Budget Advisory Committee, College of Liberal Arts, UMN	2004–2006
Reviewer, Center for the Philosophy of Science External Review Team, College of Liberal Arts, UMN	2004–2006

Departmental Service

Director of Undergraduate Studies, Department of Geography, UMN	2010–2015
Chair, Undergraduate Educational Policy Committee, Department of Geography, UMN	2010–2015
Member, Executive Committee, Department of Geography, UMN	2010–2015
Member, Undergraduate Educational Policy Committee, Department of Geography, UMN	2003–2015
Chair, GIS Search Committee, Department of Geography, UMN	2014–2015
Chair, Constitution Committee, Department of Geography, UMN	2010–2012
Member, Awards Committee, Department of Geography, UMN	2005–2011
Co-chair, Environment/Health Position Search Committee, Department of Geography, UMN	2009–2010
Chair, Admissions and Financial Aid Committee, Department of Geography, UMN	2009–2010
Member, Admissions and Financial Aid Committee, Department of Geography, UMN	2006–2009
Co-Director, Masters of Geographic Information Science Program	2004–2009
Member, Masters of GIS Executive Committee, UMN	2002–2009
Member, Research Committee, Department of Geography, UMN	2005–2007
Member, Strategic Planning Committee, Department of Geography, UMN	2006–2007
Member, Information Technology Committee, Department of Geography, UMN	2002–2007
Member, Masters of GIS Admissions Committee, UMN	2002–2007
Member, Merit Committee, Department of Geography, UMN	2005–2006

Member, Executive Committee, Department of Geography, UMN	2004–2015
Member, Undergraduate Educational Policy Committee, Department of Geography, UMN	2003–2006
Member, Human Geography Position Search Committee, Department of Geography, UMN	2003–2005
Chair, Undergraduate Educational Policy Committee, Department of Geography, UMN	2003–2004
Member, Committee for Diversity, Department of Geography, UMN	2002–2004

Public Service

Member, Technical Advisory Group, Natural Capital Project	2010–date
Worked with Twin Cities communities to develop growth plans via Center Urban and Regional Affairs' Community Growth Options initiative.	2010–2013
Hosted student workshops for Twin Cities students in collaboration with EcoEducation. Introduced use of the <i>Minnesota Interactive Mapping Project</i> , an internet mapping application	2008–2010
Collaborated with EcoEducation to develop the <i>Minnesota Interactive Mapping Project</i> , an internet mapping application that supports courses across the K-12 curriculum	2006–2010
Hosted Professional Development Institute in internet mapping and urban-environmental education for thirty Twin Cities teachers in collaboration with EcoEducation	2007–2009
Worked with the Science Museum of Minnesota on urban modeling as part of their NSF-funded Future Earth Initiative	2008–2009
Collaborated with EcoEducation, an environmental education organization that serves the Twin Cities' diverse K-12 students, to integrate geospatial technology and spatial thinking into its Model Schools in Urban Environmental Education program	2005–2009
Faculty researcher/consultant in land use and GISc for the Minnesota Statewide Conservation and Preservation Plan, Legislative-Citizen Commission on Minnesota Resources	2006–2008
Presented <i>Lying with Maps</i> seminar to the Osher Lifelong Learning Institute (OLLI), a membership-based learning community of older adults in the Twin Cities	2007
Presented <i>Seeing Earth from Space</i> seminar to the Breakthrough St. Paul, an academic enrichment program for highly motivated, under-resourced middle school students from St. Paul public schools	2007
Researcher working with the Minnesota Department of Natural Resources to model human-wolf habitat interactions	2004–2007
Researcher working with the Metropolitan Council (Minnesota's regional planning agency) to create medium-term land use projections	2004–2007
Participated in Academic Night, Alpha Omicron Pi, University of Minnesota	2003