

## Biographical Sketch: Annemarie Schneider

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### ACADEMIC APPOINTMENTS

University of Wisconsin, Madison, Wisconsin      **Assistant Professor, Nelson Institute for Environmental Studies, 2007 to present.**  
Center for Sustainability and the Global Environment (SAGE), with an affiliated appointment in the Department of Geography.

University of Wisconsin, Madison, Wisconsin      **Affiliated Appointment, Department of Geography, 2007 to present.**  
Joint affiliation with the College of Letters and Science.

University of California, Santa Barbara, California      **Assistant Professor, Department of Geography, 2004 to 2007.**  
Joint affiliation with the Institute for Computational Earth System Science.

### EDUCATION

Boston University, Boston, Massachusetts      **Doctor of Philosophy, Geography and Environmental Science, September 2001 to December 2005.** Dissertation: *Urban Growth as a Component of Global Change*. Faculty advisor: Curtis Woodcock.

Boston University, Boston, Massachusetts      **Master of Arts, Geography, Environmental Remote Sensing and GIS, 1999 to 2001.**  
Thesis: *Mapping Urban Areas by Fusing Multiple Sources of Coarse Resolution Data*. Faculty advisor: Mark Friedl.

University of Wisconsin, Madison, Wisconsin      **Bachelor of Science, Geography, 1993 to 1997.**  
Studies focused on physical geography and environmental systems.

University of Wisconsin, Madison, Wisconsin      **Bachelor of Science, Studio Art, 1993 to 1997.**  
Curriculum included architecture, art history, technical and design courses.

### RESEARCH INTERESTS

Human dimensions of land cover change  
Urban geography, particularly urban environment, urban form, and urban economic geography  
Global environmental monitoring and change  
Quantitative methods in geography, spatial analysis  
Geographic information science (GIS), remote sensing and digital image processing

### PUBLICATIONS

Published or in press      D. Potere, **A. Schneider**, S. Angel, and D. Civco. Mapping urban areas on a global scale: which of the eight maps now available is more accurate? *International Journal of Remote Sensing*, in press, July 2009.

**A. Schneider**, and C. E. Woodcock. Compact, dispersed, fragmented, extensive? A comparison of urban growth in 25 global cities using remotely sensed data, pattern metrics and census information. *Urban Studies*, volume 45, pages 659-692, March 2008.

D. Potere, C. E. Woodcock, **A. Schneider**, M. Ozdogan, A. Baccini, and S. Gopal. Patterns in forest clearing along the Appalachian Trail corridor. *Photogrammetric Engineering and Remote Sensing*, volume 73, pages 783-791, July 2007.

D. Potere and **A. Schneider**. A critical look at representations of urban areas in global maps. *Geojournal, Special Issue on Population Distribution*, volume 69, pages 55-80, June 2007.

R. Kaufmann, K.C. Seto, **A. Schneider**, L. Zhou. Climate response to rapid urban growth: evidence of a human-induced precipitation deficit. *Journal of Climate*, volume 20, pages 2290-2306, May 2007.

**A. Schneider**, K.C. Seto, and D. R. Webster. Urban growth in Chengdu, Western China: linking remote sensing, urban planning and policy perspectives. *Environment and Planning B*, volume 32, pages 323-345, May 2005.

X. Zhang, M. A. Friedl, C. B. Schaaf, A. H. Strahler, and **A. Schneider**. The footprint of urban climates on vegetation phenology. *Geophysical Research Letters*, volume 31, article L12209, June 2004.

**A. Schneider**, M. A. Friedl, D. K. McIver, and C. E. Woodcock. Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data. *Photogrammetric Engineering and Remote Sensing*, volume 69, pages 1377-1386, December 2003.

**A. Schneider**, K.C. Seto, D. R. Webster, J. Cai, and B. Luo. Spatial and temporal patterns of urban dynamics in Chengdu, 1975-2002. *Asia Pacific Research Center (APARC) Paper*, Stanford Institute for International Studies, Stanford University, October 2003.

M. A. Friedl, D. K. McIver, J. C. F. Hodges, Z. Y. Zhang, D. Muchoney, A. H. Strahler, C. E. Woodcock, S. Gopal, **A. Schneider**, A. Cooper, A. Baccini, F. Gao, C. Schaaf. Global land cover mapping from MODIS: algorithms and early results. *Remote Sensing of Environment*, volume 83, pages 287-302, November 2002.

In review

**A. Schneider**, M. A. Friedl and D. Potere. Monitoring urban areas globally using MODIS 500m data: New methods based on phenological patterns and urban ecoregions. *Remote Sensing of Environment*, in review, July 2009.

K. Curtis and **A. Schneider**. First estimates of localized human impact of future climate change. *Demography*, in review, July 2009.

M.A. Friedl, D. Sulla-Menashe, B. Tan, **A. Schneider**, N. Ramankutty, and A. Sibley. MODIS Collection 5 Global Land Cover: algorithm refinements and characterization of new datasets. *Remote Sensing of Environment*, in review, July 2009.

**A. Schneider**, M. A. Friedl and D. Potere. A new map of global urban extent from MODIS data. *Environmental Research Letters*, in review, January 2009.

## PROCEEDINGS AND BOOK CHAPTERS

**A. Schneider**, M. A. Friedl, and D. Potere. Monitoring the extent and intensity of urban areas globally using the fusion of MODIS 500m resolution satellite imagery and ancillary data sources. *IEEE International Geoscience and Remote Sensing Symposium*, Boston, Massachusetts, July 6-11, 2009.

K. Curtis and **A. Schneider**. Understanding the demographic implications of climate change: a first look at localized population predictions. *Proceedings of the Population Association of America 2009 Annual Meeting*, Detroit, Michigan, April 30-May 2, 2009.

**A. Schneider**, M. A. Friedl and D. Potere, A new map of global urban extent from MODIS remote sensing data based on an urban ecoregion approach, in *Global Mapping of Human Settlement*, CRC Press, editors M. Herold and P. Gamba, in press.

D. Potere and **A. Schneider**, Comparison of global urban maps, in *Global Mapping of Human Settlement*, CRC Press, editors M. Herold and P. Gamba, in press.

D. Potere and **A. Schneider**, Urban expansion and the global network of protected areas, in *Proceedings of the Population Association of America 2008 Annual Meeting*, New Orleans, Louisiana, April 17-19, 2008.

**A. Schneider**, Monitoring urban areas globally and locally: understanding land use change and its possible drivers, in *Our Changing Planet: A View from Space*, Cambridge University Press, editors M. King, K. Partington, and R. Williams, 2007.

Seto, K. C., **A. Schneider**, and M. Fragkias, 20 years after reforms: challenges to planning and development in China's city regions and opportunities for remote sensing, in *Remote Sensing for Urban Planning, Governance and Sustainability*, Springer, editors M. Netzband, W. Stefanov, and C. Redman, 2007.

**A. Schneider**, Understanding urban growth in the context of global change, in *International Human Dimensions Programme on Global Environmental Change Update: Focus on Urbanization and Global Environmental Change*, February 2006.

**A. Schneider**, M.A. Friedl, and C.E. Woodcock, Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data: global results, in *Proceedings of the 5<sup>th</sup> International Symposium of Remote Sensing of Urban Areas*, Tempe, Arizona, March 14-16, 2005.

**A. Schneider**, K. C. Seto, and C. E. Woodcock. Spatial and temporal patterns of land cover change in Chengdu, China, 1978-2002. *IEEE International Geoscience and Remote Sensing Symposium*. Toulouse, France, July 21-25, 2003.

**A. Schneider**, M. A. Friedl, and C. E. Woodcock. Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data: Global results. *IEEE International Geoscience and Remote Sensing Symposium*. Toulouse, France, July 21-25, 2003.

**A. Schneider**, M. A. Friedl, D. K. McIver and C. E. Woodcock. Mapping urban areas using coarse resolution remotely sensed data. *Remote Sensing of Urban Areas, Third International Symposium*, Istanbul, Turkey, June 11-13, 2002.

**A. Schneider**, D. K. McIver, M. A. Friedl and C. E. Woodcock. Mapping urban areas using coarse resolution remotely sensed data. *IEEE/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas*, Rome, Italy, November 8-9, 2001.

**A. Schneider**, D. K. McIver, M. A. Friedl and A. Strahler. Classification of urban areas at continental scales using remote sensing. *IEEE International Geoscience and Remote Sensing Symposium*, Sydney, Australia, July 9-13, 2001.

M. A. Friedl, D. K. McIver, X. Y. Zhang, J. C. F. Hodges, **A. Schneider**, A. Baccini, A. Strahler, A. Cooper, F. Gao, C. Schaaf, and W. Liu. Global land cover classification results from MODIS. *IEEE International Geoscience and Remote Sensing Symposium*., Sydney, Australia, July 9-13, 2001.

## PRESENTATIONS

K. Curtis and **A. Schneider**. Understanding the demographic implications of climate change: a first look at localized population predictions. *Population Association of America 2009 Annual Meeting*, Detroit, Michigan, April 30-May 2, 2009.

**A. Schneider**. Monitoring and modeling urbanization China: a mixed methods and multi-scale approach, *NASA's Land Cover Land Use Change Program Science Team Joint Meeting, Land Cover/Land Use Change Processes in the Monsoon Asia Region*, Khon Kaen, Thailand, January 12-17, 2009.

**A. Schneider**, *invited presentation*. Friend or foe? Urbanization and the biosphere. *American Geophysical Union Fall Meeting*, San Francisco, California, December 15-19, 2008.

**A. Schneider**, M. A. Friedl, and D. Potere. Toward a database of urban characteristics for global environmental modeling: A new map of global urban extent from MODIS 463m data. *American Geophysical Union Fall Meeting*, San Francisco, California, December 15-19, 2008.

**A. Schneider**, M. A. Friedl, and D. Potere. Monitoring the extent and intensity of urban areas globally using the fusion of MODIS 500m resolution satellite imagery and ancillary data sources. *IEEE International Geoscience and Remote Sensing Symposium*, Boston, Massachusetts, July 6-11, 2009.

**A. Schneider**, M. A. Friedl, and D. Potere, Monitoring urbanization and urban expansion globally: challenges and opportunities. *American Association of Geographers Annual Meeting*, Boston, Massachusetts, April 15-20, 2008.

D. Potere and **A. Schneider**, Urban expansion and the global network of protected areas. *Population Association of America 2008 Annual Meeting*, New Orleans, Louisiana, April 17-19, 2008.

**A. Schneider**, Spatial and temporal patterns of global urbanization. *Princeton University, Office of Population Research, Interdisciplinary Lecture Series: Urban Transformations in the Developing World*, Princeton, New Jersey, March 24, 2008.

**A. Schneider**, Monitoring spatial and temporal patterns of global urbanization: a data fusion approach. *University of Wisconsin, Madison, Spatial Information and Analysis Consortium Lectures*, Madison, Wisconsin, November 30, 2007.

- A. Schneider**, Monitoring urbanization globally. *University of Wisconsin, Madison, Department of Geography Yi Fu Tuan Lecture Series*, Madison, Wisconsin, November 16, 2007.
- A. Schneider**, Monitoring urbanization globally: challenges and opportunities. *University of Wisconsin, Madison, Center for Sustainability and the Global Environment Seminar Series*, Madison, Wisconsin, November 7, 2007.
- A. Schneider**, and M. A. Friedl, Mapping global urban extent and intensity for environmental monitoring and modeling. *American Geophysical Union Spring Meeting*, Acapulco, Mexico, May 22-25, 2007.
- A. Schneider**, and M. A. Friedl, Mapping global urban extent, intensity, and vegetation using the fusion of MODIS satellite imagery and ancillary data sources. *American Association of Geographers Annual Meeting*, San Francisco, California, April 17-21, 2007.
- A. Schneider**, The urban dimension of global environmental change. *San Diego State University Department of Geography Spring Colloquium Series*, San Diego, California, February 9, 2007.
- A. Schneider**, Urban growth as a component of global change: an overview. *University of Wisconsin, Madison, Center for Sustainability and the Global Environment Seminar Series*, Madison, Wisconsin, January 25, 2007.
- A. Schneider**, Urbanization as a component of global change. *University of California, Santa Barbara, Department of Geography Seminar Series*, Santa Barbara, California, November 2006.
- D. Potere, and **A. Schneider**, Comparative analysis of global urban maps: estimation, validation, and recommendations. *Second International Young Scientists' Global Change Conference and The Earth System Science Partnership Global Environmental Change Open Science Conference*, Beijing, China, November 7-12, 2006.
- A. Schneider**, and C. E. Woodcock, Compact, dispersed, extensive? A comparison of urban growth in 25 global cities. *American Association of Geographers Annual Meeting*, Chicago, Illinois, March 7-11, 2006.
- D. Potere, K. McNeany, and **A. Schneider**, Global urban estimates: a comparison. *American Association of Geographers Annual Meeting*, Chicago, Illinois, March 7-11, 2006.
- A. Schneider**, M.A. Friedl, and C.E. Woodcock, Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data: global results, *International Symposium of Remote Sensing of Urban Areas*, Tempe, Arizona, March 14-16, 2005.
- A. Schneider**, Urban growth as a component of global change: early results. *International Institute for Applied Systems Analysis*, Laxenburg, Austria, July 15, 2004.
- A. Schneider**, Urban growth as a component of global change. *Arizona State University Department of Geography Spring 2004 Seminar Series*, Tempe, Arizona, May 3, 2004.
- A. Schneider**, M. A. Friedl, and C. E. Woodcock. Understanding urban areas in a global context: monitoring urban land cover and land cover change. *American Geophysical Union Fall Meeting, Human-Induced Climate Variations Linked to Urbanization: From Observations to Modeling*, San Francisco, California, December 8-12, 2003.

**A. Schneider**, K. C. Seto, and C. E. Woodcock. Spatial and temporal patterns of land cover change in Chengdu, China, 1978-2002. *IEEE International Geoscience and Remote Sensing Symposium*. Toulouse, France, July 21-25, 2003.

**A. Schneider**, M. A. Friedl, and C. E. Woodcock. Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data: Global results. *IEEE International Geoscience and Remote Sensing Symposium*. Toulouse, France, July 21-25, 2003.

**A. Schneider**, and C.E. Woodcock. Urbanization as a component of global change. *NASA's Land Cover Land Use Change Annual Science Team Meeting*, Washington, D.C., November 21-23, 2002.

**A. Schneider**, M. A. Friedl, D. K. McIver and C. E. Woodcock. Mapping urban areas using coarse resolution remotely sensed data. *Remote Sensing of Urban Areas, Third International Symposium*, Istanbul, Turkey, June 11-13, 2002.

**A. Schneider**, D. K. McIver, M. A. Friedl and C. E. Woodcock. Mapping urban areas using coarse resolution remotely sensed data. *IEEE/ISPRS Joint Workshop on Remote Sensing and Data Fusion over Urban Areas*, Rome, Italy, November 8-9, 2001.

## EXTERNAL FUNDING AND AWARDS

**Monitoring and Modeling Urbanization in China: A Mixed Methods and Multi-Scale Approach**, NASA Land-Cover Land-Use Change Program, Principal Investigator, May 2008 to May 2011, \$621,000.

**Understanding Urbanization Processes Globally: Monitoring and Modeling the Socio-Economic Drivers of Urban Expansion**, University of Wisconsin, Madison Graduate School Fall Competition 2007, Principal Investigator, June 2008 to May 2009, \$33,782.

**Rivers and Cities: An Innovative Partnership Creating Opportunities for Undergraduates to Interpret Their Earth through Digital Lenses**, NASA, Co-Investigator, April 2006 to August 2008, \$46,000.

**The Earth from Above: Proposal to Develop Lecture and Laboratory Materials for Introduction to Remote Sensing, Geography 115 Series**, University of California Instructional Improvement Program Grant, Principal investigator, June to September, 2006, \$7,000.

**Urbanization as a Component of Global Change**, NASA Earth System Science Enterprise Fellowship, September 2001 to January 2005, \$75,000.

**International Institute for Applied Systems Analysis Young Scientists Program**, Vienna, Austria, June to August 2004, summer study grant provided by the National Academy of Science, \$6,400.

**Leica Geosystems Award for Best Scientific Paper in Remote Sensing, Second Place**, for "Mapping urban areas by fusing coarse resolution remotely sensed data," *Photogrammetric Engineering and Remote Sensing*, December 2003.

**Peri-Urban Land Use Change in China: The Case of the Chengdu Extended Urban Area**, remote sensing imagery and field work travel stipend grant. Principal investigator: Douglas R. Webster. World Bank, October 2002, \$10,000.

**State of Wisconsin Undergraduate Student Scholarship**, full four-year tuition scholarship awarded to Wisconsin high school valedictorians. University of Wisconsin, Madison, 1993 to 1997.

## TEACHING EXPERIENCE

University of Wisconsin,  
Madison, Wisconsin

**Assistant Professor**, undergraduate and graduate-level classes:

*The Urban Environment*, Institute for Environmental Studies 901, graduate seminar, three credits, every other spring semester.

*Introduction to Environmental Remote Sensing*, Institute for Environmental Studies 301, undergraduate course, three credit lecture and lab, fall semesters.

*Intermediate Environmental Remote Sensing*, Institute for Environmental Studies 302, undergraduate course, four credit lecture and lab, spring semesters.

*Modeling and Analysis of Environmental Systems*, Institute for Environmental Studies 506, graduate course, three credits, co-taught with Tracey Holloway, fall 2008.

**Guest Lecturer**, Environmental *Digital Image Processing*, Institute for Environmental Studies 556, lectures on urbanization, decision trees and data fusion, fall 2008.

Mekong Institute  
Khon Kaen, Thailand

*Geospatial Technology and Applications*, international science outreach workshop January 16-17, 2009.

University of California,  
Santa Barbara, California

**Assistant Professor**, undergraduate and graduate-level classes:

*The Earth from Above: Introduction to Aerial Photography and Remote Sensing*, Geography 115a, undergraduate course, five credit lecture and lab, fall quarters.

*Introduction to Remote Sensing*, Geography 115b, undergraduate course, five credit lecture and lab, winter quarters.

*Intermediate Remote Sensing*, Geography 115c, undergraduate course, five credit lecture and lab, spring quarters.

*Land Use-Land Cover Change*, Geography 242, graduate-level course, winter quarters.

Boston University,  
Boston, Massachusetts

**Guest Lecturer**, undergraduate and graduate-level classes:

*Remote Sensing of Vegetation*, graduate course, spring 2003, "Understanding and mapping the urban-rural interface using remote sensing."

*Introduction to Remote Sensing*, undergraduate course, fall 2002, "Remote sensing of urban areas: from global to local."

*Digital Image Processing of Remote Sensing*, graduate course, fall 2002, “Mapping urban areas by fusing multiple sources of data: methods using decision trees and prior information.”

*Digital Image Processing of Remote Sensing*, graduate course, fall 2001, “Understanding decision trees and boosting.”

Boston University,  
Boston, Massachusetts

**Instructor/Lecturer**, high school-level Boston University-Boston Public Schools Outreach Program, four lectures/workshops yearly, spring 2000 to 2004.  
“Introduction to the urban environment, GPS and GIS.”

Interaction Institute,  
Buenos Aires, Argentina

**Instructor**, high school and adult education English, fall 1997 to spring 1999.  
Prepared and presented lectures/classes in English as a Second Language (beginner to advanced conversation), English Composition, and English Literature, eight classes daily.

## UNIVERSITY SERVICE

**University of Wisconsin, Madison, Nelson Institute Weston Fellowship Committee**, Chair, September 2008 to present. Lead efforts to assess and select incoming graduate students to receive the Roy Weston Fellowship for Sustainability Research.

**University of Wisconsin, Madison, Environmental Remote Sensing Group**. September 2007 to present. Currently building a network of faculty, scientists and students on campus who are interested in remote sensing technologies and applications. Activities include regular ‘sand-box’ meetings, brown-bag lunches, planning for strategic cross-campus funding, and design of a remote sensing graduate certificate.

**University of Wisconsin, Madison, Environmental Monitoring Program Committee**, September 2007 to present. Currently working to redesign and reestablish a graduate degree in Environmental Monitoring for the Nelson Institute.

**University of Wisconsin, Madison, Land Use Committee**, January 2009 to present. Work as part of five core faculty to design and implement an interdisciplinary curriculum on Land Use.

**University of Wisconsin, Madison, Faculty Committee, Certificate on Humans and the Global Environment (CHANGE) Integrative Graduate Education and Research Traineeship (IGERT)**, October, 2007 to present. Advise students and develop curriculum for graduate students studying for the CHANGE Certificate offered by the Nelson Institute’s Center for Sustainability and the Global Environment. Co-taught one of three core classes, fall 2008.

**University of Wisconsin, Madison, University Reaccreditation Activities, *Putting University of Wisconsin on the Global Agenda***, September, 2007 to present. Participate in activities to create and sustain the University as a place of learning and discovery that is part of a globally connected community.

**University of California, Santa Barbara SPOT Imagery Research Center**, 2004 to 2007. Assisted in the development of a new research center (housed within the Institute of Computational Earth System Science) to provide no-cost high-resolution satellite imagery to UCSB researchers and reduced-cost data access to academic institutions.

**University of California, Santa Barbara Geography Computing Committee**, 2004 to 2007. Developed computing facilities for the Geography Department including renovation of three undergraduate and graduate computer labs for instruction.

**University of California, Santa Barbara Geography Committee on Diversity**, 2004 to 2007.

## COMMUNITY SERVICE

**University of California-Santa Barbara Wellness Program Student Outreach**, 2006 to present. Organized and led mini-course to introduce current first-year and prospective students to Global Positioning Systems (GPS) and remotely sensed imagery.

**Boston University-Boston Public Schools Outreach Program**, 2000 to 2005. Initiated, organized, designed and led outreach programs to introduce local middle school and high school students to environmental science and geography. Instructed workshops, courses, and hands-on activities on urban environmental assessment, Global Positioning Systems (GPS) and GIS.

**Boston University Pathways Program**, mentor and participant, 2002 and 2003. Participated in two-day program introducing high school women to careers in science.

**Boston University Student Pugwash**, Vice President, 2001 to 2005. Founding member of student branch of international organization dedicated to socially responsible use of science. Assisted in organizing panel discussions and workshops on topics including the impact of globalization on culture, the energy crisis, and the nexus of academia, environmentalism and activism.

**Boston University Department of Geography Brown Bag Lunch Series**, 2000 to 2001. Initiated and organized series of ten lectures for graduate student community.

## REVIEWS

Journal reviews: *Professional Geographer*, *Photogrammetric Engineering and Remote Sensing*, *Remote Sensing of Environment*, *International Journal of Geographic Information Science*, *Journal of Applied Meteorology and Climatology*.

## PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU).  
American Association of Geographers (AAG).  
American Society for Photogrammetry and Remote Sensing (ASPRS).

## FOREIGN LANGUAGE SKILLS

Spanish and intermediate level German.