

## Annemarie Schneider - Curriculum Vitae

Associate Professor, Nelson Institute for Environmental Studies and the Department of Geography  
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### Professional preparation

Ph.D.	Boston University, Geography and Environment	2006
	Dissertation: <i>Urban Growth as a Component of Global Change</i>	
M.A.	Boston University, Geography, Environmental Remote Sensing and GIS	2001
B.S.	University of Wisconsin-Madison, Geography	1997

### Academic appointments

**Associate Professor**, Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE), University of Wisconsin-Madison, 2015 to present. Affiliate appointments in the Department of Geography and the Center for Demography and Ecology.

**Assistant Professor**, Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE), University of Wisconsin-Madison, 2007-2014 (two-year tenure clock extension for major illness). Affiliate appointments in the Department of Geography and the Center for Demography and Ecology.

**Assistant Professor**, Department of Geography, University of California-Santa Barbara, 2004-2007. Affiliate appointment in the Institute for Computational Earth System Science.

**Visiting Young Scientist**, International Institute for Applied Systems Analysis (IIASA), Land Use Change Project, Laxenburg, Austria, 2004.

**Research Assistant**, Department of Geography and Environmental Science, Boston University, 1999-2006.

### Research interests

Land use/land cover change, urbanization, human dimensions of environmental change, geospatial technologies, remote sensing, geographic information science

### Publications

Authors with an \* are Dr. Schneider's graduate advisees, or students with whom she worked closely as a committee member.

1. Huang, X.\*, A. Schneider, and M. Friedl (2016) Mapping sub-pixel urban expansion in China using MODIS and DMSP/OLS nighttime lights. *Remote Sensing of Environment*, volume 175, pages 92-108.

2. Alix-Garcia, J., **A. Schneider**, and N. Zhao\* (2016) Playing favorites: Tax incentives and urban growth in China, 1978-2010. *Land Economics*, volume 92, pages 1-27.
3. Kontgis, C.\*, **A. Schneider**, and M. Ozdogan (2015) Mapping rice paddy extent and intensification in the Vietnamese Mekong River Delta with dense time stacks of Landsat data. *Remote Sensing of Environment*, volume 169, pages 255-269.
4. **Schneider, A.**, C. M. Mertes\*, A. J. Tatem, B. Tan, D. Sulla-Menashe, S. J. Graves\*, N. N. Patel, J. A. Horton\*, A. E. Gaughan, J. T. Rollo\*, I. H. Schelly\*, F. Stevens, and A. Dastur (2015) A new urban landscape in East Asia, 2000-2010. *Environmental Research Letters*, volume 10, 034002.
5. **Schneider, A.**, C. Chang\*, and K. Paulsen (2015) The changing spatial form of cities in Western China. *Landscape and Urban Planning*, volume 135, pages 40-61.
6. Mertes, C. M\*., **A. Schneider**, B. Tan, D. Sulla-Menashe, and A. J. Tatem (2015) Detecting change in urban areas at continental scales with MODIS data. *Remote Sensing of Environment*, volume 158, pages 331-347.
7. Kontgis, C.\*, **A. Schneider**, J. Fox, S. Saksena, J. Spencer, and M. Castrence (2014) Monitoring peri-urbanization in the greater Ho Chi Minh City metropolitan area. *Applied Geography*, volume 53, pages 377-388.
8. **Schneider, A.**, and C. M. Mertes\* (2014) Expansion and growth in Chinese cities, 1978-2010. *Environmental Research Letters*, volume 9, 024008.
9. Kennedy, R. E., S. Andrefouet, W. B. Cohen, C. Gomez, P. Griffiths, M. Hais, S. Healey, E. H. Helmer, P. Hostert, M. Lyons, G. Meigs, D. Pflugmacher, S. Phinn, S. L. Powell, P. Scarth, T. A. Schroeder, **A. Schneider**, S. Sen, R. Sonnenschein, J. E. Vogelmann, M. A. Wulder, and Z. Zhu (2014) Bringing an ecological view of change to Landsat-based remote sensing. *Frontiers in Ecology and the Environment*, volume 12, pages 339-446.
10. **Schneider, A.** (2012) Monitoring land cover change in urban and peri-urban areas using dense time stacks of Landsat satellite data and a data mining approach. *Remote Sensing of Environment*, volume 124, pages 689-704.
11. **Schneider, A.**, K.E. Logan\*, and C. Kucharik (2012) Impacts of urbanization on ecosystem goods and services in the U.S. Corn Belt. *Ecosystems*, doi: 10.1007/s10021-012-9519-1.
12. K. Curtis, and **A. Schneider** (2011) First estimates of localized human impact of future climate change. *Population and Environment*, doi: D10.1007/s11111-011-0136-2.
13. **Schneider, A.**, M.A. Friedl, and D. Potere\* (2010) Mapping urban areas globally using MODIS 500m data: New methods and datasets based on urban ecoregions. *Remote Sensing of Environment*, volume 114, pages 1733-1746.
14. Friedl, M. A., D. Sulla-Menashe, B. Tan, **A. Schneider**, N. Ramankutty, and A. Sibley (2010) MODIS Collection 5 Global Land Cover: algorithm refinements and characterization of new datasets. *Remote Sensing of Environment*, volume 114, pages 168-182.
15. Potere, D.\*, **A. Schneider**, S. Angel, and D. Civco (2009) Mapping urban areas on a global scale: which of the eight maps now available is more accurate? *International Journal of Remote Sensing*, volume 30, pages 6531-6558.

16. **Schneider, A.**, M. A. Friedl, and D. Potere\* (2009) A new map of global urban extent from MODIS data. *Environmental Research Letters*, volume 4, article 044003.
17. **Schneider, A.**, and C. E. Woodcock (2008) 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.
18. Potere, D.\*, and **A. Schneider** (2007) A critical look at representations of urban areas in global maps. *Geojournal, Special Issue on Population Distribution*, volume 69, pages 55-80.
19. Potere, D.\*, C. E. Woodcock, **A. Schneider**, M. Ozdogan, A. Baccini, and S. Gopal (2007) Patterns in forest clearing along the Appalachian Trail corridor. *Photogrammetric Engineering and Remote Sensing*, volume 73, pages 783-791.
20. Kaufmann, R., K. C. Seto, **A. Schneider**, and L. Zhou (2007) Climate response to rapid urban growth: evidence of a human-induced precipitation deficit. *Journal of Climate*, volume 20, pages 2290-2306.
21. **Schneider, A.**, K. C. Seto, and D. R. Webster (2005) Urban growth in Chengdu, Western China: linking remote sensing, urban planning and policy perspectives. *Environment and Planning B*, volume 32, pages 323-345.
22. Zhang, X., M. A. Friedl, C. B. Schaaf, A. H. Strahler, and **A. Schneider** (2004) The footprint of urban climates on vegetation phenology. *Geophysical Research Letters*, volume 31, article L12209.
23. **Schneider, A.**, M. A. Friedl, D. K. McIver, and C. E. Woodcock (2003) Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data. *Photogrammetric Engineering and Remote Sensing*, volume 69, pages 1377-1386.
24. Friedl, M. A., 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, and C. Schaaf (2002) Global land cover mapping from MODIS: algorithms and early results. *Remote Sensing of Environment*, volume 83, pages 287-302.

### **Publications in review**

25. Kontgis, C.\*, **A. Schneider**, M. Ozdogan, C. Kucharik, V. Tri, D. Nguyen, and J. Schatz (2016) Climate change impacts on rice productivity in the Mekong River Delta. *Agricultural Systems*, in review.
26. Hurni, K., **A. Schneider**, A. Heinimann, D. Nong, and J. Fox (2016) Mapping the expansion of boom crops in Mainland Southeast Asia using dense time stacks of satellite data. *Remote Sensing*, in review.

### **Monographs and book chapters**

1. Deuskar, C., **A. Schneider**, and A. Dastur (2015). *East Asia's Changing Urban Landscape: Measuring a Decade of Spatial Growth*. Urban Development Series, World Bank Monograph, World Bank Publications, Washington D.C.

2. **Schneider, A.** (2007) “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.
3. **Schneider, A.**, M. A. Friedl, and D. Potere\* (2009) “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, pages 107-128.
4. Potere, D.\*, and **A. Schneider** (2009) “Comparison of global urban maps”, in *Global Mapping of Human Settlement*, CRC Press, editors M. Herold and P. Gamba, pages 269-308.
5. **A. Schneider** (2009) “Monitoring urban areas”, in *Earth Observations from Space: The First 50 Years of Scientific Achievements*, National Research Council, National Academies Press, pages 89-90.
6. Seto, K. C., **A. Schneider**, and M. Fragkias (2007) “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, pages 249-270.
7. **Schneider, A.** (2006) 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.
8. **Schneider, A.**, K.C. Seto, D. R. Webster, J. Cai, and B. Luo (2003) 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.

### Conference proceedings

1. Curtis, K., and **A. Schneider** (2009) Climate change and population predictions: spatial variability in populations at risk for sea level rise. *International Union for the Scientific Study of Population (IUSSP) XXVI International Population Conference*, Marrakech, Morocco, September 27- October 2, 2009.
2. **Schneider, A.**, M. A. Friedl, and D. Potere\* (2009) 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.
3. Curtis, K., and **A. Schneider** (2009) 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.
4. Potere, D.\*, and **A. Schneider** (2008) 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.
5. **Schneider, A.**, M. A., and C. E. Woodcock (2005) Mapping urban areas by fusing multiple sources of coarse resolution remotely sensed data: global results. *Proceedings of the 5<sup>th</sup> International Symposium of Remote Sensing of Urban Areas*, Tempe, Arizona, March 14-16, 2005.

6. Salomon, J., J. C. F. Hodges, M. Friedl, C. Schaaf, A. Strahler, F. Gao, **A. Schneider**, X. Zhang, N. El Saleous, and R. E. Wolfe (2004) Global land-water mask derived from MODIS Nadir BRDF-adjusted reflectances (NBAR) and the MODIS land cover algorithm. *IEEE International Geoscience and Remote Sensing Symposium*, Anchorage, Alaska, September 20-24, 2004.
7. **Schneider, A.**, K. C. Seto, and C. E. Woodcock (2003) 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.
8. **Schneider, A.**, M. A. Friedl, and C. E. Woodcock (2003) 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.
9. **Schneider, A.**, M. A. Friedl, D. K. McIver, and C. E. Woodcock (2002) Mapping urban areas using coarse resolution remotely sensed data. *Remote Sensing of Urban Areas, Third International Symposium*, Istanbul, Turkey, June 11-13, 2002.
10. **Schneider, A.**, D. K. McIver, M. A. Friedl, and C. E. Woodcock (2001) 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.
11. **Schneider, A.**, D. K. McIver, M. A. Friedl, and A. Strahler (2001) Classification of urban areas at continental scales using remote sensing. *IEEE International Geoscience and Remote Sensing Symposium*, Sydney, Australia, July 9-13, 2001.
12. Friedl, M. A., 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 (2001) Global land cover classification results from MODIS. *IEEE International Geoscience and Remote Sensing Symposium*, Sydney, Australia, July 9-13, 2001.

## Research presentations

### Invited presentations, international- and national-level

1. **Schneider, A.** (2016) Urban transitions in Mainland Southeast Asia, *East-West Center Synthesis Workshop*, Honolulu, Hawaii, January 10, 2016.
2. **Schneider, A.** (2015) Mapping urban expansion at continental scales using a multi-temporal data fusion approach. *American Association of Geographers Annual Meeting*, April 23, 2015.
3. **Schneider, A.** (2014) Mapping a decade of change: urban expansion and growth in East Asia, 2000-2010. *Wisconsin Geospatial Summit*, March 24, 2014.
4. **Schneider, A.** (2013) The urban flagship in the East Asia and Pacific region: Monitoring expansion with satellite data, *World Bank Sustainable Development Week*, Washington, D.C., February 27, 2013.
5. **Schneider, A.** (2012) Monitoring urban expansion in East Asia: Past work and current directions using 500 m satellite data, *6<sup>th</sup> Urban Research and Knowledge Symposium: Rethinking Cities, Framing the Future*, Barcelona, Spain, October 10, 2012.

6. **Schneider, A.** (2012) West meets east: monitoring and modeling urbanization in China. *NASA's Land Cover Land Use Change Program Science Team Meeting*, Washington, D.C., April 3, 2012.
7. **Schneider, A.** (2012) The global extent of urban land and urban expansion: past work and future directions, *World Bank East Asia and Pacific Region Division*, Washington, D.C., April 2, 2012.
8. **Schneider, A.** (2011) Monitoring urbanization in China. *Lincoln Land Institute, Peking University*, Beijing, China, June 6, 2011.
9. **Schneider, A.** (2011) The demographic implications of climate change: estimates of localized population predictions under future scenarios of sea-level rise. Special invitation by Former Vice President Al Gore to present at his *Summit for Population and Demographics*, New York, New York, July 21, 2011.
10. **Schneider, A.** (2011) Monitoring and modeling urbanization in Western China. *NASA's Land Cover Land Use Change Program Science Team Meeting*, Washington, D.C., March 28, 2011.
11. **Schneider, A.** (2011) Satellite-derived measures of urbanization. *Roundtable on development of a multi-hazard city risk index*, *World Bank*, February 4, 2011.
12. **Schneider, A.** (2010) Cities from space: monitoring urban areas at local, regional, and global scales using satellite data sets. *The 20<sup>th</sup> Session of the Working Party on Territorial Indicators, Organisation for Economic Cooperation and Development (OECD)*, November 29, 2010.
13. **Schneider, A.** (2010) Urbanization in China: a synthesis. *NASA's Land Cover Land Use Change Program Science Team Meeting*, Washington, D.C., April 20, 2010.
14. **Schneider, A.** (2010) Monitoring and modeling urbanization with remote sensing data: from global to local analysis. *State Key Laboratory for Remote Sensing Science, Chinese Academy of Sciences*, January 15, 2010.
15. **Schneider, A.** (2010) Monitoring, modeling and forecasting urbanization. *Institute for Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences*, January 14, 2010.
16. **Schneider, A.** (2009) A new map of global urban extent from MODIS 500 m data. *American Geophysical Union Fall Meeting*, San Francisco, California, December 14-18, 2009.
17. **Schneider, A.** (2009) Monitoring and modeling urbanization in China: a mixed methods and multi-scale approach. *NASA's Land Cover Land Use Change Program Science Team Meeting, Land Cover/Land Use Change Processes in the Monsoon Asia Region*, Khon Kaen, Thailand, January 14, 2009.
18. **Schneider, A.** (2008) Friend or foe? Urbanization and the biosphere. *American Geophysical Union Fall Meeting*, San Francisco, California, December 15, 2008.
19. **Schneider, A.** (2004) Urban growth as a component of global change: early results. *International Institute for Applied Systems Analysis*, Laxenburg, Austria, July 15, 2004.
20. **Schneider, A.**, and C.E. Woodcock (2002) 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.

### Invited presentations, university level

1. **Schneider, A.** (2016) Understanding urban expansion in China and East Asia: Big data and data mining approaches. *Beijing-Normal and University of Wisconsin-Madison Joint Workshop on Geographic Research*, Madison, Wisconsin, April 14, 2016.
2. **Schneider, A.** (2015) Mapping a decade of change: urban expansion and growth in East Asia, 2000-2010. *University of Wisconsin-Madison Urban and Regional Planning Lecture Series*, Madison, Wisconsin, May 1, 2015.
3. **Schneider, A.** (2014) Urban expansion and growth in East Asia, 2000-2010. *Wisconsin Geospatial Summit Keynote Address*, Madison, Wisconsin, March 24, 2014.
4. **Schneider, A.** (2013) Cities from space: Using satellite technology to inform urban planning and policy, 7<sup>th</sup> Annual Nelson Institute Earth Day Conference, Madison, Wisconsin, April 15, 2013.
5. **Schneider, A.** (2012) Monitoring the Earth from above: Mining satellite data to map urbanization at local to global scales. *University of Wisconsin, Madison Department of Computer Sciences Seminar Series, AI in the Wild*, Madison, Wisconsin, March 6, 2012.
6. **Schneider, A.** (2011) The role of urbanization in conservation. *University of Wisconsin, Madison, Southwest China IGERT Seminar*, Madison, Wisconsin, April 11, 2011.
7. **Schneider, A.** (2011) Urbanization, land use change, and evolving urban form in Western China. *Xinjiang Institute of Geography and Ecology, Chinese Academy of Sciences*, Urumqi, China, January 4, 2011.
8. **Schneider, A.** (2010) Cities from space: monitoring urbanization from local to global scales using remotely sensed data. *University of Wisconsin, Madison, Center for Demography and Ecology Fall Seminar*, Madison, Wisconsin, November 9, 2010.
9. **Schneider, A.** (2009) Representations of urbanization in regional-global environmental models. *University of Wisconsin, Madison, Department of Atmospheric and Oceanic Sciences Fall Seminar*, Madison, Wisconsin, December 7, 2009.
10. **Schneider, A.** (2009) Understanding urban expansion. *University of Maryland, College Park, Department of Geography Fall Colloquium*, College Park, Maryland, October 22, 2009.
11. **Schneider, A.** (2008) 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.
12. **Schneider, A.** (2007) 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.
13. **Schneider, A.** (2007) Monitoring urbanization globally. *University of Wisconsin, Madison, Department of Geography Yi Fu Tuan Lecture Series*, Madison, Wisconsin, November 16, 2007.
14. **Schneider, A.** (2007) Monitoring urbanization globally: challenges and opportunities. *University of Wisconsin, Madison, Center for Sustainability and the Global Environment Seminar Series*, Madison, Wisconsin, November 7, 2007.

15. **Schneider, A.** (2007) The urban dimension of global environmental change. *San Diego State University Department of Geography Spring Colloquium Series*, San Diego, California, February 9, 2007.
16. **Schneider, A.** (2006) Urbanization as a component of global change. *University of California, Santa Barbara, Department of Geography Seminar Series*, Santa Barbara, California, November 16, 2006.
17. **Schneider, A.** (2004) Urban growth as a component of global change. *Arizona State University Department of Geography Spring 2004 Seminar Series*, Tempe, Arizona, May 3, 2004.

### **Press features of research program**

- 2015 “Asia’s cities swell as population surges”, article in *Science* volume 347 (6226), (March 2015).
- 2015 “Scientists map unprecedented urbanization in East and Southeast Asia”, press release and feature story associated with publication of *Environmental Research Letters* article (March 2, 2015), appeared in *Environmental Research Web*, *Guru Magazine*, etc.
- 2011 “Human impacts of rising oceans will extend well beyond coasts”, feature story associated with publication of *Population and Environment* article (May 27, 2011, co-author Katherine Curtis), appeared in *Science Daily*, *eScience News*, *Science Magazine News*, *Physorg.com*, *R&D Magazine*, *TerraDaily*, etc.
- 2009 “New process leads to smaller estimate for global urban area”, feature story associated with American Geophysical Union presentation (December 16, 2009), appeared in *Science for Environment Policy*.
- 2009 “Monitoring and modeling urbanization in China,” project chosen for NASA’s Land Cover- Land Use Change Program press materials and website (August, 2009).
- 2003 “NASA satellites watch world cities grow”, feature story associated with American Geophysical Union presentation, appeared in *MSNBC’s Technology and Science Section* (December 12, 2003), *NASA’s Earth Observatory* (December 12, 2003), *RedOrbit* (December 13, 2009), and *Science Daily* (December 19, 2003).

### **Honors and awards**

- 2011 *Environmental Research Letters* award for top publication of 2006-2011, “A new map of global urban extent from satellite data”.
- 2009 Best poster award for “Climate change and population predictions: spatial variability in populations at risk for sea level rise,” International Union for the Scientific Study of Population (IUSSP) *XXVI International Population Conference* (co-author Dr. Katherine Curtis).
- 2004 National Academy of Science Young Scientist award to work at the International Institute for Applied Systems Analysis (IIASA).
- 2003 Leica Geosystems award for best scientific paper in remote sensing, “Mapping urban areas by fusing coarse resolution remotely sensed data,” *Photogrammetric Engineering and Remote Sensing*.
- 2001 NASA Earth System Science Graduate Fellowship for *Urbanization as a Component of Global Change*.



## Funding

### Funded external awards

1. Project title: **Incorporating a new urban dataset from SeaWinds into a multi-sensor analysis of global daytime and nighttime urban heat islands**  
 Program: NASA Science of Terra and Aqua  
 Project duration: September 2014 – August 2017  
 Amount: \$725,312  
 P.I.: S. Frolking (University of New Hampshire)  
 P.I. (Wisconsin): A. Schneider  
 Co-Investigators: M. Friedl (Boston University)
  
2. Project title: **Forest, agricultural, and urban transitions in Mainland Southeast Asia: Synthesizing knowledge and developing theory**  
 Sponsor: NASA Land Cover-Land Use Change Program  
 Project duration: May 2014 – April 2018  
 Amount: \$750,000 (Wisconsin: \$251,495)  
 P.I.: J. Fox (East-West Center)  
 P.I. (Wisconsin): A. Schneider  
 Co-Investigators: I. Baird (Wisconsin), A. Heinimann (Center for Cultural and Technical Change between East and West), J. Spencer (East-West Center)
  
3. Project title: **Urbanization, climate change, and rice crop sustainability**  
 Sponsor: NASA Earth and Space Science Fellowship  
 Project duration: September 2013 – August 2016  
 Amount awarded: \$90,000  
 P.I.: A. Schneider  
 Graduate student: C. Kontgis
  
4. Project title: **Monitoring urban expansion 2000-2010 using satellite data sources**  
 Sponsor: World Bank East Asia and the Pacific Division  
 Project duration: May 2012 – October 2013  
 Amount awarded: \$140,000  
 P.I.: A. Schneider
  
5. Project title: **Multi-scale and multi-sensor analysis of urban cluster development and agricultural land loss in China and India**  
 Sponsor: NASA's Land Cover-Land Use Change Program  
 Project duration: May 2011 – June 2014  
 Amount awarded: Wisconsin: \$35,000  
 P.I.: K. Seto (Yale)  
 Co-Investigators: M. Fragkias (Arizona State), A. Schneider (Wisconsin), J. Liu (Chinese Academy of Sciences), P. Joshi (India's Energy and Resources Institute), X. Deng (Chinese Academy of Sciences)
  
6. Project title: **Projecting future demographic trends for populations vulnerable to climate variability and land use change in the Yahara watershed**  
 Sponsor: National Science Foundation Social Science Supplement  
 Project duration: June 2011 – May 2012  
 Amount awarded: \$20,000

- P.I. K. Curtis (Wisconsin), A. Schneider (Wisconsin), C. Kucharik (Wisconsin)
7. Project title: **Monitoring and modeling urbanization in China: A mixed methods and multi-scale approach**  
 Sponsor: NASA's Land Cover-Land Use Change Program  
 Project duration: May 2008 – May 2011  
 Amount awarded: \$622,000 (Wisconsin: \$587,000)  
 P.I.: A. Schneider  
 Co-Investigators: K. Paulsen (Wisconsin), K. Seto (Yale), and J. Shen (Chinese University of Hong Kong)
8. Project title: **Rivers and cities: An innovative partnership creating opportunities for undergraduates to interpret their Earth through digital lenses**  
 Sponsor: NASA Higher Education Program  
 Project duration: April 2006 – March 2008  
 Amount awarded: \$46,000 (sub-award)  
 P.I.: R. West (East Los Angeles College)  
 Co-Investigators: L. Mertes (UCSB), A. Schneider (UCSB)
9. Project title: **Understanding urbanization in a global sample of 40 cities**  
 Program: International Institute for Applied Systems Analysis (IIASA) *Young Scientists Program*, with funding from the U.S. National Academy of Science  
 Project duration: June – August 2004  
 Amount awarded: \$6,400  
 P.I.: A. Schneider (graduate student fellowship)
10. Project title: **Peri-urban land use change in China: The case of the Chengdu Extended Urban Area**  
 Program: World Bank East Asia and Pacific Region's Urban Division (EASUR)  
 Project duration: September 2002 – May 2003  
 Amount awarded: \$10,000  
 P.I.: D. Webster (Stanford)  
 Role: Graduate student investigator and project manager
11. Project title: **Urbanization as a component of global change**  
 Program: NASA Earth System Science Fellowship  
 Project duration: September 2001 – January 2005  
 Amount awarded: \$75,000  
 P.I.: A. Schneider (graduate student fellowship with advisor C. Woodcock)

#### **Internal awards at University of Wisconsin-Madison**

1. Project title: **Multi-sensor analysis of global daytime and nighttime urban heat islands**  
 Program: University of Wisconsin-Madison Graduate School Fall Competition 2014-2015  
 Project duration: January 2014 – December 2014  
 Amount awarded: \$33,844  
 P.I.: A. Schneider
2. Project title: **Forecasting land cover change in Chinese cities**  
 Program: University of Wisconsin-Madison Vilas Life Cycle Award 2011-2012  
 Project duration: January 2012 – December 2012  
 Amount awarded: \$29,629

- P.I.: A. Schneider
3. Project title: **Human impacts of climate change: Synthesizing, harmonizing and characterizing human migration systems**
- Program: University of Wisconsin-Madison College of Agriculture and Life Sciences Hatch Formula Fund Competition
- Project duration: October 2011 – September 2012
- Amount: \$43,000
- P.I.: K. Curtis
- Co-Investigator: A. Schneider
4. Project title: **Understanding land cover change processes at the urban-agricultural interface in the U.S., Turkey and China**
- Program: University of Wisconsin-Madison Graduate School Fall Competition 2011-2012
- Project duration: September 2011 – August 2012
- Amount awarded: \$34,010
- P.I.: A. Schneider

#### **Internal awards at University of California-Santa Barbara**

5. Project title: **The Earth from above: A proposal to develop lecture and laboratory materials for *Geography 115 Introduction to Remote Sensing***
- Program: University of California-Santa Barbara Instructional Improvement Program
- Project duration: June – September 2006
- Amount awarded: \$7,000
- P.I.: A. Schneider

#### **Teaching**

**Geog - Introduction to Environmental Remote Sensing** 2005-present  
**Env St 371** 3 credit hours, offered every fall semester, enrollment 55-75 students.

An introduction to the Earth as viewed from above, focusing on use of aerial photography and satellite imagery to study the environment. Includes physical processes of electromagnetic radiation, data types and sensing capabilities, methods for interpretation, analysis and mapping, and applications ranging from forest management to urban planning to mining and mineral exploration. Course content is introduced in lecture, and then explored in computer labs that allow students to review class content in detail, discuss topics in small groups, build a skill base from one lab to the next, and develop critical thinking and problem-solving skills.

**Geog - Intermediate Environmental Remote Sensing** 2005-present  
**Env St 372** 3 credit hours, offered every other spring semester, enrollment 20-30 students.

Examines intermediate-level concepts in information extraction, data processing and radiative transfer relevant to remote sensing of the environment. Includes data transforms, image correction, classification algorithms, expert systems approaches, and change detection, with emphasis on applications for land use planning and natural resource management. The course is specifically oriented toward development of undergraduate student projects that exploit remote sensing data and methods to understand a key environmental problem.

**Env St 556**                      **Advanced Digital Image Processing for Remote Sensing**                      2014-present  
3 credit hours, offered every other spring semester, enrollment 15-20 students.3

Explores advanced-level image analysis, data extraction, and map-making using earth observation data. Topics include change detection, data fusion, analysis of dense image time stacks, traditional and semi-automated radiometric and geometric correction techniques, advanced machine learning and data mining algorithms for environmental applications, as well as both object-oriented and pixel-based processing. Explores a range of optical, infrared, RADAR, LiDAR, and thermal data across multiple spatial resolutions. Includes hands-on labs and a final project based on the student's interests.

**Geog 930 -**                      **Remote Sensing for International Development**                      2016-present  
**Env St 900**                      3 credit hours, offered every other spring semester, enrollment 12-20 students.

Seminar designed to explore the ways remote sensing data are being used within an international development context, broadly defined. Examines how projects were completed with satellite data, what data sources were necessary, how expert local knowledge was incorporated, and how various challenges were faced and overcome. Particular attention paid to how application of remote sensing data helped alter policy in different countries across the globe.

**Env St 971**                      **Environmental Sensing Technologies**                      in preparation  
3 credit hours, targeted enrollment 20-40 students.

Many diverse technologies for monitoring and sensing the environment have become available in recent years, including traditional aerial photography and satellite imagery, hyper-spectral data, imagery on demand, and more. Some, like LiDAR, have existed for decades, but are now achieving the scale and price points where they can be utilized more broadly, but for which there is still much untapped potential. Other data sources are quite unconventional, with many emerging relatively recently: unmanned aerial systems (i.e. drones), social media, the Internet of Things (IoT), nano-sensors, smartphones as sources of crowd-sourced data, "big data", and more. Sophisticated data management, analytics, and presentation technology is required to effectively leverage both the spatial (including 3D) and temporal dimensions of these data sources. This course is intended to survey and explore this array of sensor types, and where possible, provide direct experience to the student to understand and interact with these sensing technologies, and to learn to plan, manage, and utilize them effectively.

**Geog 970 -**                      **Land Use-Land Cover Change**                      2006-present  
**Env St 900**                      3 credit hours, offered every other spring semester, enrollment 12-20 students.

Seminar-style course that examines the development of land change studies and the theoretical and methodological challenges to linking biophysical, socio-economic, and remote sensing/GIS analysis of landscape processes. Particular focus on three central themes in land change science: (1) detection and monitoring of land cover change processes; (2) driving forces of land cover change, and (3) impacts and consequences of those changes. While the core of the class is reading, discussion, and a final paper based on the student's research interests, a portion of the course is devoted to professional development, including presentation preparation, applying for extra-curricular funding, publishing in peer-reviewed journals, and working with collaborators across multiple disciplines.

**Env St 401**                      **The Urban Environment**                      2007-2010  
3 credit hours, spring semester, enrollment 15 students.

Developed directly from Dr. Schneider's research program, this class covers topics that range from the biophysical dimensions of environmental change (urban climate, the water cycle, landscape change) to the human aspects of these modifications (urban demographics, urban sprawl, transportation/land use dynamics,

adaptation and resilience, and human health). The goal is to provide an overview of the environmental issues facing urban areas, a review of the fundamental theories, concepts, and tools for developing successful responses to these problems, and a discussion of the interdisciplinary or trans-disciplinary perspective needed to tackle unanswered questions about the sustainability of urban systems.

**Env St 900**                      **Seminar on Sustainability and the Global Environment**                      2008-2012  
1 credit hour, fall semester, enrollment 15-20 students

This discussion-based seminar explores environmental issues from an interdisciplinary perspective, engaging students, scientists, and faculty in the Nelson Institute and in the Center for Sustainability and the Global Environment, as well as the university and broader community.

## Graduate and undergraduate advising

Table 1. Dr. Schneider's graduate advisees.

Status	Name	Degree (date)	Program	Thesis title - topic	Employment following graduation
<b>Current</b> – Master's	Leanne Abraham	M.S. (2018)	Geography	Monitoring land use with emerging data sources	
<b>Current</b> – Master's	Evan Applegate	M.S. (2016)	Geography	Understanding land cover change in the greater Pakse region	
<b>Past</b> – Ph.D.	Caitlin Kontgis	Ph.D. (2016)	Geography, CHANGE Fellow, NASA Earth & Space Science Fellow	Land use, land cover, and climate change impacts on rice production in the Mekong River Delta	Geographer, Descartes Labs
<b>Past</b> – Master's	Zhiwei Ye	M.S. (2016)	Nelson Environment & Resources	Automated characterization of rapid urbanization using spectral-temporal profiles in Landsat dense time stacks	Continued on for Ph.D. at UW-Madison's Nelson Institute
<b>Past</b> – Master's	Carly Mertes	M.S. (2014)	Geography	Detecting change in urban areas at continental scales with MODIS data and a data fusion approach	Wisconsin Department of Natural Resources and State Cartographer's Office
<b>Past</b> – Master's	Chaoyi Chang	M.S. (2013)	Nelson Environment & Resources	Analysis of evolving spatial form of urbanizing regions in Western China	Continued on for Ph.D. studies at UW-Madison
<b>Past</b> – Master's	Kelly Logan	M.S. (2010)	Nelson Environment & Resources	Urbanization impacts at the urban- agricultural interface in Midwestern cities: an ecosystem modeling approach	International Union for Conservation of Nature

<b>Past – Ph.D.</b>	David Potere	Ph.D. (2008)	Demography (Princeton)	Mapping the world’s cities: an examination of global urban maps and their implications for conservation planning	Consultant, Boston Consulting Group
<b>Past – Master’s</b>	Kailen Wright	M.S. (2008)	Geography (UCSB)	Mapping urban areas using very high resolution satellite imagery and decision trees	Google Earth

*Abbreviations: CHANGE refers to the Nelson Institute’s Certificate on Humans and the Global Environment.*

Table 2. Dr. Schneider’s undergraduate advisees.

<b>Status</b>	<b>Name</b>	<b>Degree (date)</b>	<b>Program</b>	<b>Thesis title – topic</b>	<b>Employment following graduation</b>
<b>Current – Undergraduate</b>	Mengyu Liang	B.S. (2017)	Geography	Urban expansion in Khon Kaen, Thailand	
<b>Past – Undergraduate</b>	Tobin McGilligan	B.S. (2016)	Geography	Quality of life indicators in urban areas from satellite remote sensing	
<b>Past – Undergraduate</b>	Brian Brito	B.S. (2016)	Environmental Sciences, McNair Scholar	Peri-urbanization in Thailand	
<b>Past – Undergraduate</b>	Conner Hutchins	B.S. (2013)	Economics	Understanding the role of foreign direct investment in rapid urban expansion in China	Central Japan Railway Company
<b>Past – Undergraduate</b>	Jonathan Spencer	B.S. (2010)	Geography	Remote sensing database management	
<b>Past – Undergraduate</b>	Matt Mejac	B.S. (2009)	Geography	Remote sensing and GIS analysis of urban impacts on agriculture	GIS technician, Milwaukee, WI
<b>Past – Undergraduate</b>	Chelsea Martin	B.S. (2009)	Geography	Remote sensing data interpretation and cartographic design	Research intern, NASA Goddard Space Flight Center; MA study at University of Oklahoma
<b>Past – Undergraduate</b>	Caitlin Kontgis	B.S. (2007)	Geography (UCSB)	Monitoring urban expansion in Hanoi, Vietnam with remote sensing (senior honor thesis)	Graduate study at Berkeley’s Dept of Geography, Ph.D. study at UW-Madison

Table 3. Dr. Schneider's Cartography-GIS Certificate Program advisee (graduate-level professional program within UW-Madison Geography).

<b>Status</b>	<b>Name</b>	<b>Degree (date)</b>	<b>Program</b>	<b>Thesis title - topic</b>	<b>Employment following graduation</b>
<b>Past</b> – Cart-GIS intern	Dan Van Dorn	Certificate (2014)	Geography	Scaling maps of urban expansion from local to global scales	Graphics Specialist, University of California-Santa Barbara
<b>Past</b> – Cart-GIS Intern	Jeff Hatzel	Certificate (2014)	Geography	Monitoring peri-urbanization in Phnom Penh, Cambodia	Continued on for M.S. at UW-Madison Geography
<b>Past</b> – Cart-GIS Intern	Ian Schelly	Certificate (2014)	Geography	Monitoring urbanization in East Asia	GIS-Remote Sensing technician, Gibbs Lab
<b>Past</b> – Cart-GIS Intern	James Rollo	Certificate (2014)	Geography	Assessment of accuracy in maps of urban expansion in East Asia	GIS technician, Roadview, Inc.
<b>Past</b> – Cart-GIS Intern	Derek Grisbeck	Certificate (2012)	Geography	Urban expansion in Fuzhou, China	GIS technician, DDMS, Inc.
<b>Past</b> – Cart-GIS Intern	Carly Mertes	Certificate (2012)	Geography	Monitoring urban expansion in China	Continued on for M.S. at UW-Madison Geography

Table 4. Dr. Schneider's committee memberships and co-advising activities.

<b>Status</b>	<b>Name</b>	<b>Degree (date)</b>	<b>Program</b>	<b>Thesis title - topic</b>	<b>Employment following graduation</b>
<b>Current</b> – Ph.D.	Niwaeli Kimambo	Ph.D. (2019)	Geography	Urban-rural linkages in East Africa	
<b>Current</b> – Ph.D.	Aparna Phalke	Ph.D. (2017)	Nelson Environment & Resources	Cropland mapping with high resolution satellite data over large areas	
<b>Current</b> – Ph.D.	Tedward Erker	Ph.D. (2017)	Forest and Wildlife Ecology	Monitoring tree species distribution in urban areas	
<b>Past</b> – Master's	Aline Carrara	Master's (2016)	Nelson Environment & Resources	Understanding rancher response to zero-deforestation cattle agreements in Mato Grosso, Brazil	Continued on for Ph.D. at University of Florida

<b>Past – Ph.D.</b>	Jason Schatz	Ph.D. (2015)	Agronomy	Heat island impacts in Wisconsin	Post-doc fellowship at UW-Madison
<b>Past – Ph.D.</b>	Na Zhao	Ph.D. (2015)	Agricultural and Applied Economics	Understanding drivers of land use change in China	Economist, National Association of Home Builders
<b>Past – Ph.D.</b>	William Buckingham	Ph.D. (2012)	Nelson Environment & Resources	Human health and the environment	Health geographer, UW-Madison Applied Population Lab
<b>Past – Ph.D.</b>	Chris Uejio	Ph.D. (2011)	Nelson Environment & Resources	Environmental influences on public health problems	Post-doc fellowship at NCAR
<b>Past – Master’s</b>	Hiroko Yoshida	M.S. (2010)	Nelson Environment & Resources	Urbanization impacts on waste management	Graduate study at Denmark Tech Univ Dept of Environ Engineering
<b>Past – Master’s</b>	Lauren Lewis	M.S. (2010)	Geography, Univ of Capetown, South Africa	Urban growth in South Africa: comparing 30 years of imagery to census data	South African Engineering Company
<b>Past – Master’s</b>	Megan Christensen	M.S. (2009)	Nelson Environment & Resources	Understanding drivers of Chagas disease in peri-urban Peru	Internship at SAGE
<b>Past – Master’s</b>	Brent Hecht	M.S. (2008)	Geography (UCSB)	Utilizing Wikipedia as a spatio-temporal knowledge repository	Graduate study at Northwestern’s Dept of Computer Science
<b>Past – Master’s</b>	Jory Hecht	M.S. (2007)	Geography (UCSB)	Influence of basin characteristics on low flows in the upper Lempa Watershed, Central America	Illinois State Water Survey
<b>Past – Master’s</b>	Nicholas Gazulis	M.S. (2006)	Geography (UCSB)	Exploring the DNA of our regions: Classification of output from an urban growth cellular automaton model	U.S. Central Intelligence Agency

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## Outreach activities

While I do not have formal obligations in extension or outreach, I have participated broadly in outreach activities across campus and the international scientific community.

## Education and workshops

Year	Title, Committee	Activities
2014	<i>Workshop on accuracy assessment for large area, maps</i> , University of Pavia, Italy	Prepared and taught three days of lectures for international workshop on accuracy assessment best practices for global urban mapping.
2011	Organizer and instructor, <i>Remote Sensing Technology Workshop</i> , Hanoi, Vietnam	Developed lectures and lab exercises for international science outreach workshop to train academics and professionals in Southeast Asia in remote sensing and geospatial technologies.
2008-present	Faculty participant, presenter, <i>UW-Madison Geography Club</i>	Attend group meetings, advise students and present on careers in geography.
2008	Organizer and instructor, <i>Mekong Institute Geospatial Technology Workshop</i> , Khon Kaen, Thailand	Developed and taught lectures and lab exercises for international science outreach workshop to train academics and professionals in Southeast Asia in remote sensing and geospatial technologies.
2006-2007	Faculty mentor, <i>University of California-Santa Barbara Wellness Program Student Outreach</i>	Organized and led mini-courses to introduce prospective and first-year undergraduate students to remote sensing and Global Positioning Systems (GPS).
2001-2005	Founder and Vice President, <i>Boston University Student Pugwash</i>	Founding member of student branch of international organization dedicated to socially responsible use of science. Organized panel discussions and workshops on topics ranging from the impact of globalization on culture to energy to environmental activism.
2000-2002	Organizer, <i>Boston University Geography Brown Bag Lunch Series</i>	Initiated and led series of lunch-time lectures to build community across faculty, scientists and graduate students in the Geography Department and Center for Remote Sensing.

## Promoting diversity

Year	Title, Committee	Activities
2005-2007	Faculty director and undergraduate advisor, <i>UCSB Geography-Eastern Los Angeles College Internship Program</i>	Led undergraduate internship program focused on introducing women and minorities to remote sensing technologies. Taught undergraduate courses and workshops, advised students, and directed internship program (additional details are described in external funding).

2002-2004	Mentor, <i>Boston University Pathways Program</i>	Participated in two-day program introducing local high school women to careers in science.
2000-2005	Organizer, <i>Boston University-Boston Public Schools Outreach Program</i>	Initiated, designed, organized, and led outreach programs to introduce local middle and high school students to environmental science. Instructed workshops, mini-courses, and hands-on activities on the urban environment, remote sensing, GIS, and Global Positioning Systems (GPS) to students from under-represented minorities.

### Professional service

Year	Title, Committee	Activities
2014-present	Faculty lead, <i>Professional Master's in Environmental Observation and Informatics</i>	Currently leading efforts to design a new professional degree that integrates cross-cutting earth observation sensors, technologies and big data analytics in an accelerated and blended professional master's program model.
2013-present	<i>Academic Planning Council, Nelson Institute for Environmental Studies</i>	Advise the Nelson Institute director on program review, expansion of academic programs, development of strategic plans and long range planning, programmatic decision-making relevant to tenure, promotions, and renewal of faculty appointments.
2009-present	<i>People-Environment Graduate Review Committee, Geography Department</i>	Review, recommend graduate applicants for the People-Environment track within the Geography Department.
2008-present	Chair, <i>Weston Fellowship Committee</i>	Solicit, review, and judge prospective graduate students for the one-year Weston Fellowship offered by the Nelson Institute.
2007-present	Undergraduate advisor, <i>Geography Cart-GIS Program</i>	Advise and mentor students on class choice, internships, and professional development within the Geography Department.
2007-present	<i>Environmental Remote Sensing Group</i>	Founding member of research-oriented faculty group that bridges the Nelson Institute, the Department of Forest and Wildlife Ecology, and the Department of Atmospheric and Oceanic Sciences. The committee is working to establish cross-cutting research activities and an intellectual community focused on remote sensing of land use.
2007-2014	Faculty steering committee, <i>Certificate on Humans and the Global Environment (CHANGE) IGERT, Nelson Institute</i>	Advised and co-advised IGERT students pursuing the CHANGE Certificate, participated in community-building meetings and activities, reviewed program and fellowship applicants, hosted prospective students, and represented the CHANGE program at national IGERT conferences.

2009-2012	<i>Science Council, Cooperative Institute for Meteorological Studies (CIMSS)</i>	Participated in and advised the CIMSS community on collaborative research projects that exploit remote sensing technology, and foster training of scientists and engineers in remote sensing and Earth system science.
2008-2012	Seminar organizer, <i>Nelson Institute's SAGE Seminar</i>	Led seminar series that aimed to provide a forum for students faculty and researchers to present and discuss topics related to SAGE core research themes.
2008-2010	<i>Nelson Institute Land Use Certificate Committee</i>	Member of core faculty team to design and implement an interdisciplinary curriculum on land use that bridges biophysical and landscape processes, policy and economics, and measurement and technology.
2007-2010	<i>Environmental Monitoring Program Committee</i>	Worked to establish a graduate certificate program for a joint Nelson Institute – College of Agriculture and Life Sciences in environmental monitoring.
2004-2007	Steering committee, <i>University of California-Santa Barbara SPOT Imagery Research Center</i>	Assisted in founding a new research center to provide no-cost high-resolution satellite imagery to UCSB researchers and reduced-cost data access to academic institutions.
2004-2007	<i>Computing Committee University of California-Santa Barbara Geography</i>	Developed computing facilities for the Geography Department, and helped lead renovation of three undergraduate computer labs for instruction.

## Journal reviews

Dr. Schneider reviews three-four articles each year for Remote Sensing of Environment, International Journal of Remote Sensing, Photogrammetric Engineering and Remote Sensing, International Journal of Geographic Information Science, Professional Geographer, Journal of Applied Meteorology and Climatology, Land Use Science, and Current Opinion in Environmental Sustainability.

## Memberships

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