

CURRICULUM VITAE

Christopher John Kucharik

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RESEARCH INTERESTS

Soil-plant-atmosphere systems, biosphere-atmosphere interactions, global climate change, soil biogeochemistry, prairie-grassland ecology and restoration, agriculture-management-climate interactions, modeling of the soil-plant-atmosphere system, crop productivity, biofuel feedstocks, and carbon sequestration

EDUCATION

Ph.D. University of Wisconsin-Madison, Atmospheric Sciences (minor Soil Science), May 1997
B.S. University of Wisconsin-Madison, Atmospheric Sciences, December 1992.

EMPLOYMENT HISTORY

Jan. 2009 – present Asst. Professor, Dept. Agronomy, CALS; The Nelson Institute, UW-Madison
May 2008 – Jan. 2009 Senior Scientist, The Nelson Institute, SAGE, UW-Madison
Dec. 2003 – Apr. 2008 Associate Scientist, The Nelson Institute, SAGE, UW-Madison
April 1999 – Nov. 2003 Assistant Scientist, The Nelson Institute, SAGE, UW-Madison
June 1997 – Mar. 1999 Research Associate, Department of Soil Science, UW-Madison

SERVICE

University

The Nelson Institute Personnel Committee ad-hoc member (2006)
The Nelson Institute Governance Faculty (2006-present)
The Nelson Institute Outreach Committee (2006-present)
Academic Staff Assembly Representative (alternate – District 156; 2006-2008)
Mentor for the University of Wisconsin Undergraduate Research Scholars (URS) Program

Public

Wisconsin Governor's Task Force on Global Warming – subcommittee on Agriculture and Forestry (2007-2008)
Science Council Member: Wisconsin Initiative on Climate Change Impacts (WICCI) (2007-present)

Professional

Editorial Advisory Board, *Global Change Biology*, 2007-present
Member, American Geophysical Union (1996-present)

Ad-hoc Manuscript Reviewer for: *Agronomy Journal*, *Global Change Biology*, *Global Biogeochemical Cycles*, *Agriculture, Ecosystems, and Environment*; *Frontiers in Ecology and Environment*, *Canadian Journal of Forest Research*, *Soil and Tillage Research*, *J. Climate*, *The American Midland Naturalist*, *Agricultural and Forest Meteorology*, *J. of Hydrometeorology*, *Ecological Modelling*, *Tree Physiology*, *Soil Science Society of America Journal*, *Environmental Research Letters*, and *Earth Interactions*

Ad-hoc Proposal Reviewer for National Aeronautics and Space Administration (NASA), National Science Foundation (NSF) and the U.S. Department of Energy (DOE) National Institute for Climate Change Research; UW-Madison Arboretum Garden Club of America Fellowships, USDA Hatch

Peer Reviewer for U.S. Climate Change Science Program (CCSP) Synthesis and Assessment Product (SAP) 2.2: The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle

International Meetings Co-chair, American Geophysical Union, 2006 Fall Meeting, San Francisco, session on Carbon and Water cycling in agroecosystems; American Geophysical Union, 2008 Fall Meeting, session on Earth System Modeling and land-use; American Meteorological Society 28th Conference on Agricultural and Forest Meteorology, session on Forest water and carbon exchange with the atmosphere; Orlando FL, April 2008.; American Geophysical Union, 2008 Fall Meeting, San Francisco, CA, session on Linking Land Use and Land Management to Models of the Earth System, Dec 17, 2008.

STUDENT ADVISING AND MENTORING

Graduate students

- Nicolas Jelinski (M.S. Land Resources, 2007)*
- Shawn Serbin (M.S. Forest Ecology, 2007)
- Gregg Sanford (M.S. Agronomy, 2007; Ph.D. expected ~2011)*
- Matt Johnston (Ph.D. expected ~2009)*
- Bill Sacks (Ph.D., expected ~2010)
- Rachel Licker (Ph.D. expected ~2010)*
- Paul West (Ph.D. expected ~2009)*
- Julie Vano (M.S. Land Resources 2005)*
- Heather Kelley (M.S. Environmental Monitoring, non-thesis, 2004)
- Tracy Twine (Ph.D., Atmospheric and Oceanic Sciences, 2003)*
- Kim Nicholas-Cahill (M.S. Land Resources, 2003)*
- Simon Donner (Ph.D. Atmospheric and Oceanic Sciences, 2002)*
- Johna Roth (M.S. Land Resources & Energy Analysis and Policy cert., 2002)
- Abby McDermott (Humans and a Changing Biosphere webcourse PA, AOS401/IES400)
- Joe Helkowski (Humans and a Changing Biosphere webcourse TA, AOS401/IES400)

* Co-advised with other faculty members in SAGE and at UW-Madison

Undergraduate students

- Brianna Laube (undergraduate independent study – senior thesis, 2009-present)
- Nikki Caine (undergraduate independent study, Spring 2009-present)
- Rachael Steller (undergraduate independent study – Senior honors thesis, 2007-2008)

- Elizabeth Hunter (undergraduate study, 2007)
- Anne Drehfal (undergraduate independent study & Senior Honors Thesis, 2005-07)
- Marianne DeBoer (M.S. foreign exchange student, 2005)
- Nathan Fayram (undergraduate senior thesis project, B.S. Botany, 2003)
- Paula Johnson (independent study Zoology 699; 3 credits, 2003)
- Tristan Wagner (independent study Zoology 699; 6 credits, 2003)
- Erica Grimm (Senior Honors Thesis, B.S. Botany and Holstrom Award Recipient, 2002)
- Paul Stoy (Senior Honors Thesis, B.S. Biology and Holstrom Award Recipient, 2000)
- Maimoona Bowcock (Undergraduate Research Scholar [URS], 2000)
- Erika Luger (Undergraduate independent research study, 1999)

Postdoctoral scientists

- Tracy Twine (2004)
- Mustapha El Mayaar (2002-2004)

Current Graduate Student Committees

- Shawn Serbin (PhD Forest Ecology)
- Gregg Sanford (PhD Agronomy)
- Bill Sacks (PhD Nelson Institute Environ./Resources)
- Devin Wixon (PhD Botany)
- David Zaks (PhD Nelson Institute Environ./Resources)

TEACHING

Helped to develop (with Carol Barford and Jon Foley) and offer the Web-based, distance learning (D2L) course “Humans and the Changing Biosphere”, [Atmospheric Sciences 401/Environmental Studies 400] for 4 semesters from fall 2004 through spring 2006. This course was designed to give undergraduate and beginning graduate students an interdisciplinary perspective of how humans are perturbing natural biogeochemical (water, carbon, nitrogen, etc.) cycles and the global climate system by using multiple research projects (with a regional focus) as case studies. The course was taught with three ideas in mind:

1. How is human civilization changing, especially in terms of our use of natural resources and releases of environmental pollutants? How are changes in population, economic development, technology and culture shape our relationship to the global environment?

2. How are human activities changing the global environment? How do our agricultural practices, which have already cleared a significant fraction of the land surface and subjected them to artificial fertilizers and irrigation, affect the environment? How do our energy use practices, especially those that have released tremendous amounts of greenhouse gases into the atmosphere, affect the environment.

3. What are the implications of global environmental change? How will a changing global environment affect the availability and geographic distribution of key resources, such as fresh water, food and clean air? How might the changing distribution of these resources affect the geopolitical forces at work in the world? Will a changing environment lead to greater instability and diminished global security?

- Developed (with Carol Barford) 3-week, 3 credit summer ecological field study course to compliment “Humans and the Changing Biosphere” distance learning course. Students learned hands-on techniques in the following: soil and root coring, data logger installation, GPS systems, leaf-level gas exchange/photosynthesis with Li-Cor 6400, estimation of litterfall and measurement of DBH, coarse woody debris measurements, soil surface CO₂ respiration along with ancillary soil temperature and

moisture measurements, calculation of ecosystem carbon budgets; soil and plant sample processing for laboratory analysis.

- Contributed to UW-Madison Dept. of Engineering Professional Development Course “Developing a Climate Change Strategy for Businesses and Public Institutions” (Instructor: Pat Eagan). January 23-24, 2008. I provided lectures on soil and geological carbon sequestration.
- Contributed to UW-Madison College of Engineering one-day workshop “Responding Effectively to Climatic Variability – Tools and Long-term strategies for water resources managers, July 10, 2008.
- Provided numerous guest lectures at UW-Madison (~50) in Soil Science Graduate Seminars (Soil Sci 728), Environmental Biophysics (Atmospheric Sciences/Environmental Studies 532), General Ecology (Ecology 452), Agroecology 702 (The Multi-functionality of Agriculture), and Atmospheric Sciences 980 – Climate Change: Science and Issues

FUNDING SOURCES

(Principal Investigator [PI] or Co-Investigator on projects securing \$4,243,229 since 2000)

- PI on federal grants totaling **\$1,469,939** since 9/1/2001
- PI on projects funded by corporations and foundations totaling **\$720,000** since 7/1/2000
- Co-I on federal grants totaling **\$2,027,778** since 5/1/2000
- Co-I on projects funded by private foundations totaling **\$100,000**
- New Co-I on North Temperate Lakes Long Term Ecological Research (LTER) Team (2007-08)
- New Co-I on Great Lakes Bioenergy Research Center (GLBRC) sustainability science (Thrust 4)

New grants (selected 2007-08)

Climate Change in Wisconsin. Energy Center of Wisconsin, Wisconsin Focus on Energy Environmental Research Program. PI Daniel J. Vimont, Co-I C.J. Kucharik. \$183,285. 07/01/08-06/30/10.

Wisconsin Initiative on Climate Change Impacts (WICCI). University of Wisconsin-Madison. Co-Is Pete Nowak, C.J. Kucharik, and D.J. Vimont. \$25,000. 4/1/08 to 3/31/09.

Riparian Vegetation Impacts on Water Quantity, Quality, and Stream Ecology. University of Nebraska-Lincoln. Co-Is J. Lenters, D. Scott, and C.J. Kucharik. \$50,000. 11/01/07 to 10/31/10.

Impacts of Historical and Future Changes in Climate and Atmospheric CO₂ on Terrestrial Ecosystem Structure and Functioning in the Midwestern U.S. PI: C.J. Kucharik, UW-Madison, Co-I John Lenters, Univ. Nebraska-Lincoln. Department of Energy National Institute for Climate Change Research (NICCR). \$373,926. 4/01/08 to 3/31/11.

An Integrated Terrestrial Carbon Model (ITCM) for North America: Constraining Process Models with Experiments and Measurements for Analysis and Projection. Department of Energy Terrestrial Carbon Processes Research, Oak Ridge National Laboratory (ORNL); Co-I Mac Post, Tony King, David Erickson, Jon Foley, Chris Kucharik, William Parton, Margaret Torn, Douglas Miller, and Sharon Waltman. Subcontract to UW \$434,907. 10/01/07 to 9/30/12.

Active grants and projects

Examining the influence of land management on soil organic matter in southern Wisconsin ecosystems. Principal Investigator C.J. Kucharik. Barker Fund – UW Foundation (College of Agricultural and Life Sciences), \$267,093. 7/00-present.

Promoting Carbon Sequestration and Land Conservation: A Proposed Local-Scale Initiative in Southern Wisconsin with Madison Gas and Electric Company. Principal Investigator C.J. Kucharik, UW-Madison MG&E grant, \$180,000. 01/02-present.

Against the Grain: The effects of Widespread, Intensifying Agriculture on the Biosphere and Climate System: PI: J.A. Foley, Co-Is C. Barford, N. Ramankutty, H. Gibbs, C. Kucharik. NASA-Interdisciplinary Science, \$231,344. 07/01/07 to 06/30/10.

Previous grants

Impacts of Past and Future Changes in Climate and Atmospheric CO₂ on Wisconsin Agriculture. Wisconsin Focus on Energy Environmental Research Grant. PI: C.J. Kucharik. \$80,134. 01/01/07 to 06/30/08.

Agricultural Land Use and the Transformation of Planet Earth: Investigating the Effects of Land Use Practices on the Ecological, Biogeochemical, and Hydrological Systems of the Planet. Co-PIs J.A. Foley, M. T. Coe, C. Barford, N. Ramankutty, and C.J. Kucharik. NASA-Interdisciplinary Science, \$902,434. 07/01/04 to 06/30/08.

Human activity and a changing biosphere. Co-PIs J.A. Foley, C.J. Kucharik, M.T. Coe, and J.M. Norman, UW-Madison. NASA, \$894,000. 5/00-4/03.

Evaluating integrated models of natural and managed ecosystems over the central and southeastern US. Principal Investigator C.J. Kucharik, M.T. Coe, N. Ramankutty, J.A. Foley. Department of Energy NIGEC, \$448,191. 7/01-6/04.

Improving and evaluating dynamic models of natural and managed ecosystems over the central and southern U.S. using AmeriFlux and MODIS data. Principal Investigator C.J. Kucharik, and T.E. Twine. DOE-National Institute for Climatic Change Research (NICCR). \$212,915. 09/01/2005-09/14/07.

PUBLICATIONS

- 45 total published /in press
- 3 under review
- 1729 total citations on 37 articles tracked by Web of Science (average **47 per article**)
- Current average of **32 citations** on first author papers
- Average of **54 citations** on other co-authored papers
- *h-index* = 15

Under review

Cahill, K.N., C.J. Kucharik, and J.A. Foley. Prairie restoration and carbon sequestration: difficulties in quantifying carbon sources or sinks using a bottom-up approach. Revised manuscript submitted to *Ecological Applications*, Sept. 2008.

Kucharik, C.J. and S.P. Serbin. Climate Effects on Wisconsin Corn and Soybean Yields from 1950-2006. Submitted to *Agronomy Journal*, Aug. 2008.

Twine, T.E. and C.J. Kucharik. Climate impacts on net primary productivity trends in natural and managed ecosystems of the United States. Submitted to the Special Issue “Environmental Biophysics: Measurement and Modeling” in *Agricultural and Forest Meteorology*. Nov 17, 2008

In press

Jelinski, N.A., C.J. Kucharik, and J.B. Zedler. A test of diversity-productivity models in natural, degraded, and restored wet prairies. Submitted to *Restoration Ecology*, September 2008.

Serbin, S.P. and C.J. Kucharik. Spatio-temporal mapping of temperature and precipitation for the development of a multi-decadal climate dataset for Wisconsin. Submitted to *J. Applied Meteorology and Climatology*, Aug. 2008.

Published

1. Johnston, M., J.A. Foley, T. Holloway, C. Kucharik, and C. Monfreda (2009). Resetting global expectations from agricultural biofuels. *Environmental Research Letters* 4, 014004.
2. Jelinski, N.A., and C.J. Kucharik (2009). Land-use effects on soil carbon and nitrogen on a Midwestern floodplain. *Soil Science Society of America Journal* 73:217-225, DOI: 10.2136/sssaj2007.0424
3. Vano, J.A., J.A. Foley, C.J. Kucharik, and M.T. Coe (2008), Controls of climatic variability and land cover on land surface hydrology of northern Wisconsin, USA. *Journal of Geophysical Research* 113, G04040, doi:10.1029/2007JG000681.
4. Steller, R.M., N.A. Jelinski, and C.J. Kucharik (2008). Developing models to predict soil bulk density in southern Wisconsin using soil chemical properties. Invited submission to Soil Quality Special Issue in the *Electronic Journal of Integrative Biosciences*, 6(1): 53-63.
5. Kucharik, C.J. (2008). Soil Response to Re-establishment of Prairie Communities in Southern Wisconsin, in *The Vanishing Present: Wisconsin's Changing Lands, Waters, and Wildlife*, Edited by Donald M. Waller and Thomas P. Rooney. The University of Chicago Press, Chicago, IL.
6. Twine, T.E., and C.J. Kucharik (2008). Evaluating a terrestrial ecosystem model with satellite information of greenness. *Journal of Geophysical Research-Biogeosciences*, doi:10.1029/2007JG000599.
7. Kucharik, C.J. and S.P. Serbin (2008). Impacts of climate change on Wisconsin corn and soybean yield trends. *Environmental Research Letters*, doi:10.1088/1748-9326/3/3/034003.
8. Donner S.D., and C.J. Kucharik (2008). Corn-based ethanol production compromises goal of reducing nitrogen export by the Mississippi River. *Proceedings of the National Academy of Sciences* 105: 4513-4518. DOI: 10.1073/pnas.0708300105.
9. Kucharik, C.J. (2008). Contribution of planting date trends to increased maize yields in the central United States. *Agronomy Journal* 100, 328-336, doi:10.2134/agronj2007.0145.

10. Kucharik, C.J. (2007) Impact of prairie age and soil order on carbon and nitrogen sequestration. *Soil Science Society of America Journal*. 12 March 2007; doi,10.2136/sssaj2006.0074, 71: 430-441.
11. Urbanski, S., C. Barford, S. Wofsy, C. Kucharik, E. Pyle, J. Budney, K. McKain, D. Fitzjarrald, M. Czikowsky, and J.W. Munger. (2007), Factors controlling CO₂ exchange on timescales from hourly to decadal at Harvard Forest, *Journal of Geophysical Research* 112, G02020, doi:10.1029/2006JG000293.
12. Kucharik, C.J. and Twine, T.E. (2007) Residue, Respiration, and Residuals: Evaluation of a Dynamic Agroecosystem Model Using Eddy Flux Measurements and Biometric Data. *Agricultural and Forest Meteorology*, 146, 134-158, doi:10.1016/j.agrformet.2007.05.011.
13. Kucharik, C.J. (2006). A multidecadal trend of earlier corn planting in the central USA. *Agron. J.* 98, 1544-1550.
14. Kucharik, C.J., C. Barford, M. El Maayar, S.C. Wofsy, R.K. Monson, D.D. Baldocchi (2006). Evaluation of a Dynamic Global Vegetation Model (DGVM) at the forest stand-level: vegetation structure, phenology, and seasonal and inter-annual CO₂ and H₂O vapor exchange at three AmeriFlux study sites. *Ecological Modelling*, 196, 1-31.
15. Kucharik, C.J., N.J. Fayram, and K.N. Cahill (2006). A paired study of prairie carbon stocks, fluxes, and phenology: comparing the world's oldest prairie restoration with an adjacent remnant. *Global Change Biology* 12, 122-139. doi:10.1111/j.1365-2468.2005.01053.x
16. Vano, J. A., J. A. Foley, C. J. Kucharik, and M. T. Coe (2006). Evaluating the seasonal and interannual variations in water balance in northern Wisconsin using a land surface model, *Journal of Geophysical Research* 111, G02025, doi:10.1029/2005JG000112.
17. El Maayar, M., N. Ramankutty, and C.J. Kucharik (2006). Modelling global and regional net primary production under elevated atmospheric CO₂: On a potential source of uncertainty. *Earth Interactions* 10, 1-20.
18. Foley, J.A., R. DeFries, G.P. Asner, C. Barford, G. Bonan, S.R. Carpenter, F.S. Chapin, M.T. Coe, G.C. Daily, H.K. Gibbs, J.H. Helkowski, T. Holloway, E.A. Howard, C.J. Kucharik, C. Monfreda, J.A. Patz, I.C. Prentice, N. Ramankutty, and P.K. Snyder (2005). Global Consequences of Land Use. *Science*, Jul 2005; 309: 570 - 574.
19. Potter, C., P. T. Pang-Ting, V. Kumar, C. Kucharik, S. Klooster, V. Genovese, W. Cohen, S. Healey, (2005). Recent history of large-scale ecosystem disturbances in North America derived from the AVHRR satellite record. *Ecosystems*, 8(7), 808-824.
20. Scholze, M., A. Bondeau, F. Ewert, C. Kucharik, J. Priess, and P. Smith (2005). Advances in Large-Scale Crop Modeling, *Eos Trans. AGU*, 86(26), 245.
21. Twine, T.E, C.J. Kucharik, and J.A. Foley (2005). Effects of the El Niño-Southern Oscillation on the climate, water balance and streamflow of the Mississippi River Basin. *Journal of Climate* 18 (22), 4840-4861.
22. Kucharik, C.J. and N. Ramankutty (2005). Trends and Variability in U.S. Corn Yields Over the 20th Century. *Earth Interactions* 9, 1-29.

23. Donner, S.D., C.J. Kucharik, and J.A. Foley (2004). The impact of changing land use practices on nitrate export by the Mississippi River. *Global Biogeochemical Cycles* 18, GB1028, doi:10.1029/2003GB002093.
24. Donner, S.D., C.J. Kucharik, and M. Oppenheimer (2004). The influence of climate on in-stream removal of nitrogen. *Geophysical Research Letters*, 31, L20509, doi:10.1029/2004GL020477.
25. Howard E.A., S.T. Gower, J.A. Foley, and C.J. Kucharik (2004). Effects of logging on carbon dynamics of a jack pine forest in Saskatchewan, Canada. *Global Change Biology* 10(8), 1267-1284. doi: 10.1111/j.1529-8817.2003.00804.x
26. Foley, J.A., C.J. Kucharik, T.E. Twine, M.T. Coe, and S.D. Donner (2004). Land use, land cover and climate change across the Mississippi basin: Impacts on selected land and water resources In "Ecosystems and Land Use Change", R. DeFries et al., eds., Geophysical Monograph Series, 153, 249-261.
27. Twine, T.E., C.J. Kucharik, and J.A. Foley (2004). Effects of land cover change on the energy and water balance of the Mississippi River Basin. *Journal of Hydrometeorology*, 5(4), 640-655.
28. Donner, S.D and C.J. Kucharik (2003). Evaluating the impacts of land management and climate variability on crop production and nitrate export across the Upper Mississippi Basin. *Global Biogeochemical Cycles*, 17(3) 1085, doi:10.1029/2001GB001808.
29. Kucharik, C.J. (2003). Evaluation of a process-based agro-ecosystem model (Agro-IBIS) across the U.S. cornbelt: simulations of the inter-annual variability in maize yield. *Earth Interactions*, 7, 1-33.
30. Kucharik, C.J. and K.R. Brye (2003). Integrated Biosphere Simulator (IBIS) yield and nitrate loss predictions for Wisconsin maize receiving varied amounts of nitrogen fertilizer. *Journal of Environmental Quality*, 32, 247-268.
31. Kucharik, C.J., J.A. Roth, and R.T. Nabielski (2003). Statistical assessment of a paired-site approach for verification of C and N sequestration on Wisconsin Conservation Reserve Program (CRP) land. *Journal of Soil and Water Conservation* 58, 58-67.
32. Wilson, T.B., J.M. Norman, W.L. Bland, and C.J. Kucharik (2003). Evaluation of the importance of Lagrangian canopy turbulence formulations in a soil-plant-atmosphere model. *Agricultural and Forest Meteorology* 115, 51-69.
33. Kucharik, C.J., K.R. Brye, J.M. Norman, S.T. Gower, L.G. Bundy and J.A. Foley (2001). Measurements and modeling of carbon and nitrogen dynamics in managed and natural ecosystems in southern Wisconsin: Potential for SOC sequestration in the next 50 years. *Ecosystems*, 4: 237-258.
34. Woodward, F.I., W. Cramer, A. Bondeau, I.C. Prentice, D. Bachelet, R.A. Betts, V. Brovkin, P.M. Cox, C. Daly, V. Fisher, J. Foley, A.D. Friend, C. Kucharik, J.M. Lenihan, M.R. Loas, C. Molling, R.P. Neilson, D.S. Ojima, W.J. Parton, N. Ramankutty, S. Sitch, and A. White (2001): Dynamic responses of global terrestrial vegetation to changes in CO₂ and climate, *Global Change Biology*, 7: 357-373.
35. Kucharik, C.J., J.A. Foley, C. Delire, V.A. Fisher, M.T. Coe, S.T. Gower, J. Lenters, C. Molling, J.M. Norman and N. Ramankutty (2000). Testing the performance of a dynamic global ecosystem model: Water balance, carbon balance, and vegetation structure. *Global Biogeochemical Cycles*, 14(3), 795-825.

36. Gower S.T., A. Hunter, J. Campbell, J. Vogel, H. Veldhuis, J. Harden, S. Trumbore, J.M. Norman, and C.J. Kucharik (2000). Nutrient dynamics of the southern and northern BOREAS boreal forests. *Ecoscience* 7 (4), 481-490.
37. Gower, S.T., C.J. Kucharik, and J.M. Norman, (1999). Direct and indirect estimation of leaf area index, f_{apar} and net primary production of terrestrial ecosystems. *Special Issue of EOS Remote Sensing of the Environment*, 70(1), 29-51.
38. Kucharik, C.J., J.M. Norman, and S.T.Gower (1999). Characterization of the radiation regime in nonrandom forest canopies: theory, measurements, and a simplified modeling approach. *Tree Physiology* 19, 695-706.
39. Kucharik, C.J., J.M.Norman, and S.T.Gower (1998). Measurements of branch area and adjusting leaf area index indirect measurements. *Agricultural and Forest Meteorology* 91, 69-88.
40. Kucharik, C.J., J.M. Norman, and S.T.Gower (1998). Measurements of leaf orientation, light distribution and sunlit leaf area in a boreal aspen forest. *Agricultural and Forest Meteorology* 91, 127-148.
41. Gower, S.T., I.G. Vogel, J.M. Norman, C.J. Kucharik, S.J. Steele, and T.A. Stow (1997). Carbon distribution and measurements of aboveground net primary production in aspen, jack pine, and black spruce stands in Saskatchewan and Manitoba, Canada. *Journal of Geophysical Research* 102(D24), 29,029-29,041.
42. Kucharik, C.J., J.M. Norman, L.M. Murdock, and S.T.Gower (1997). Characterizing canopy nonrandomness with a Multiband Vegetation Imager (MVI). *Journal of Geophysical Research* 102(D24), 29,455-29,473.
43. Norman, J.M., C.J. Kucharik, S.T. Gower, D.D. Baldocchi, P.M. Crill, M. Rayment, K. Savage, and R.G. Striegl (1997). A comparison of six methods for measuring soil surface carbon dioxide fluxes. *Journal of Geophysical Research* 102(D24), 28,771-28,778.

INVITED GUEST LECTURES / PRESENTATIONS

Abroad

1. Presentation to Wisconsin Section American Water Resources Association, March 5, 2009, Stevens Point, WI. "Wisconsin Climate Change and Water Resources".
2. Presentation to Wisconsin Government Affairs, Feb 19, 2009, Madison, WI. "Recent Evidence of Climate Change in Wisconsin: Facts, Figures, and Fiction".
3. Presentation to Wisconsin Department of Natural Resources, Feb 12, 2009, Wausau, WI. "Building a Sustainable Biofuel Future".
4. Presentation on "Carbon Sequestration and Climate Change" to Madison Audubon Society, Oct. 21, 2008.
5. Wisconsin Farmer's Union Annual conference, August, 2007, Chippewa Falls, WI.
6. "A Multidecadal Trend of Earlier Corn Planting in the Central USA: Causes and Implications". University of Nebraska-Lincoln, School of Natural Resources Weekly Fall Seminar Series, October, 2006.
7. Presentation on "Carbon Sequestration" to Dane County Land Conservation Committee, Oct. 27, 2004. Madison, Wisconsin.

CONFERENCE PRESENTATIONS SINCE 2001

INVITED

1. Kucharik, C.J. Impacts of Changing Climate and Management on Midwest Agriculture. Ecological Society of American Annual Meeting, Milwaukee Wisconsin, Aug 6, 2008.
2. Kucharik, C.J. Climate change implications for agriculture. UW-Madison Nelson Institute annual Earth Day conference. Monona Terrace, Madison, Wisconsin, April 16, 2008.
3. Kucharik, C.J. Climate Change in Wisconsin: Recent Evidence and Potential Impacts to Natural Resources. 68th Annual Midwest Fish and Wildlife Conference, Dec. 10, 2007. Monona Terrace, Madison, Wisconsin.
4. Kucharik, C.J. Climate Change in Wisconsin: Recent Evidence and Potential Impacts to Natural Resources. Wisconsin Department of Natural Resources Citizen-based monitoring conference. Keynote talk, Oct. 5, 2007, Devils Head, Merrimac Wisconsin.
5. Kucharik, C.J. Influence of prairie age and soil order on carbon sequestration in Wisconsin CRP Lands. Ecological Society of America annual meeting, August, 2007, San Jose, CA.
6. Kucharik, C.J. Carbon sequestration in Southern Wisconsin Associated with Conservation Reserve Program (CRP) Prairie restorations. Midwest Ag, Lime and Fertilizer Conference. January 18, 2006, Alliant Energy Center, Madison, WI.
7. Kucharik, C.J. and T.E. Twine. Residue and Residuals: Evaluation of an agroecosystem model using eddy flux measurements and other ecological data. AGU Annual Fall Meeting, San Francisco, CA. 2006.
8. Kucharik, C.J. 2005. Incorporating representation of agricultural ecosystems and management within IBIS: Applications from the precision agriculture to global scale. QUEST workshop on crop modeling, Bristol and Rothamsted, UK, March 9-11, 2005.
9. Kucharik, C.J. and Fayram, N.J., Gauging restoration success at Curtis prairie: Assessing structure and function using comparative measurements of the carbon cycle. North American Prairie Conference 2004, Madison, Wisconsin, August. 8-12.
10. Kucharik, C.J. Incorporating representation of agricultural ecosystems and management within a dynamic biosphere model: Approach, validation, and significance. AGU Annual Fall Meeting, San Francisco CA, Dec. 13-17, 2004.

OTHER CONFERENCE PRESENTATIONS

11. Levis, S., G.B. Bonan, and C. Kucharik. Dynamic Crop Life Cycles in the CCSM. 2008 Fall Meeting of the American Geophysical Union, Dec 17, 2008, San Francisco, CA.
12. Post, W.M., T. King, L. Gu, F. Hoffman, C. Kucharik, W. Parton, M. Torn, and D. Miller. An Integrated Terrestrial Carbon Model (ITCM) for North America: Constraining Process Models with Experiments and Measurements for Analysis and Projection. U.S. North American Carbon Program (NACP) Investigators Meeting, Jan. 22-24, 2007, Colorado Springs, CO.
13. Munger, W.J., S.P Urbanski, C. Barford, S.C. Wofsy, C. Kucharik, E. Hammond-Pyle, J. Budney, K. McKain, N. Pederson, and D. Fitzjarrald. Trends in CO₂ exchange at Harvard Forest. U.S. North American Carbon Program (NACP) Investigators Meeting, Jan 22-24, 2007, Colorado Springs, CO.
14. Jelinski, N.A., J.B. Zedler, and C.J. Kucharik. Carbon sequestration, land use and vegetation change: Prospects for a southern Wisconsin floodplain. Wisconsin Wetlands Association's 12th Annual Wetland Science Forum, La Crosse WI, Feb 1-2 2007.

15. West, P.C., J.A. Foley, C.J. Kucharik, and C. Barford. Spatial distribution of ecosystem services within large river basins. International Conference on Rivers and Civilization, La Crosse, Wisconsin, June 25-28, 2006.
16. S.D. Donner and C.J. Kucharik (2006). Large-scale modeling: IBIS-THMB Dynamic Modelling system. EPA Nutrients Sources, Transport, and Fate Symposium. Minneapolis, MN, Nov 7-9, 2006.
17. Kucharik, C.J. (2005) Using the USDA Weekly Crop Progress Record to Document Trends in Corn Planting Date From 1979 to 2005. Fall 2005 meeting of the American Geophysical Union (AGU), San Francisco, CA, Dec. 5-9.
18. Donner, S.D., Twine, T.E., Kucharik, C.J., Oppenheimer, M. (2005). Can the Climate be Used Predict Annual Nitrogen Flux by the Mississippi River and the Extent of Gulf Hypoxia? Fall 2005 meeting of the American Geophysical Union (AGU), San Francisco, CA, Dec. 5-9.
19. Howard, E.A., Coleman, K.J., Barford, C.C., Kucharik, C., Foley, J.A. (2005). When the globe is your classroom: teaching and learning about large-scale environmental change online. Fall 2005 meeting of the American Geophysical Union (AGU), San Francisco, CA, Dec. 5-9.
20. Vano, J.A., Foley, J.A., Kucharik, C.J., Coe, M.T. (2005). Investigating the Influences of Climatic Variability and Land Cover Change on the Land Surface Hydrology of Northern Wisconsin, USA. Fall 2005 meeting of the American Geophysical Union (AGU), San Francisco, CA, Dec. 5-9.
21. Twine, T.E., and C.J. Kucharik (2005). Incorporating agricultural ecosystems into a dynamic global vegetation model for climate change studies. Annual meeting of the Ecological Society of America, Montréal, Canada, August 7-12.
22. Vano, J.A., J.A. Foley, M.T. Coe, and C.J. Kucharik, Modeling the effects of heterogeneity on landscape water and energy balances in northern Wisconsin. ESA Annual meeting, Aug. 5, 2004.
23. Vano, J.A., J.A. Foley, C.J. Kucharik, and M.T. Coe, Evaluating the Influence of Various Vegetation and Soil Types on Water and Energy Balances in Northern Wisconsin Using a Dynamic Biosphere Model. AGU Annual Fall Meeting, San Francisco CA, Dec. 13-17, 2004.
24. Twine, T.E. and C.J. Kucharik. An Inter-comparison of Vegetation Greenness From Satellite Observations and a Terrestrial Ecosystem Model. AGU Annual Fall Meeting, San Francisco CA, Dec. 13-17, 2004.
25. Evaluating the effects of land cover change on the hydrology of the Mississippi River Basin, T.E. Twine, C. Kucharik, M. Coe, S. Donner, J. Lenters, and J. Foley. 83rd Annual AMS meeting, Feb. 13, 2003, Long Beach, CA & 17th Annual Conference on Hydrology.
26. The Impact of Changing Cropping Practices on Nitrate Export by the Mississippi River Since 1960, S.D. Donner and C.J. Kucharik, AGU-Chapman Conference June 14-18, Santa Fe, NM.
27. Simulation of the Seasonal and Interannual Variability of Carbon and Water Cycles Within Three Mid-latitude Forests Using a Dynamic Global Vegetation Model, C.J. Kucharik and M. El Mayaar, American Geophysical Union – Fall 2003 Meeting, San Francisco, CA.
28. Simulations of decadal-scale climate change impacts on agriculture: Attributing trends in regional corn yields to physiological effects versus adjusted farm management, C.J. Kucharik, American Geophysical Union – Fall 2003 Meeting, San Francisco, CA.
29. Large uncertainties in estimating grassland carbon fluxes: Can net ecosystem production be inferred? K.N. Cahill, J.A. Foley, and C.J. Kucharik, American Geophysical Union – Fall 2003 Meeting, San Francisco, CA.
30. The impact of changing land use practices on nitrate export by the Mississippi River, S.D. Donner, C.J. Kucharik, and J.A. Foley, American Geophysical Union – Fall 2003 Meeting, San Francisco, CA.
31. Evaluating the effects of land cover change on the hydrology of the Mississippi River Basin. T. Twine, M.T. Coe, J.D. Lenters, C.J. Kucharik, S.D. Donner, and J.A. Foley. Mississippi River Climate and Hydrology Conference, New Orleans, LA, May 13-17, 2002.

32. Evaluating the impacts of land management and climate variability on nitrate export in the Upper Mississippi River basin. S.D. Donner, M.T. Coe, and C.J. Kucharik. Mississippi River Climate and Hydrology Conference, New Orleans, LA, May 13-17, 2002.
33. Soil carbon and bulk density in two restored prairie topochronosequences on contrasting soils in southern Wisconsin. K.R. Brye, and C.J. Kucharik, Annual meeting of the Soil Science Society of America, Indianapolis, IN, Nov. 2002.
34. Statistical assessment of a paired-site approach for verification of C and N sequestration on Wisconsin CRP land. Kucharik, C.J., J.A. Roth and R.T. Niebalski, 2002. American Geophysical Union – Fall 2002 Meeting, San Francisco, CA.
35. Effects of logging on carbon dynamics of a jack pine forest chronosequence in Saskatchewan, Canada. E. Howard, S.T. Gower, J.A. Foley, and C.J. Kucharik. American Geophysical Union – Fall 2002 Meeting, San Francisco, CA.
36. Carbon cycling in restored Wisconsin grasslands: Examining linkages between plant diversity, microbial communities, and ecosystem function. K. Cahill, C.J. Kucharik, J.A. Foley, and T.C. Balser. American Geophysical Union – Fall 2002 Meeting, San Francisco, CA.
37. *American Geophysical Union*, 2001 Spring Meeting, Boston, MA. May 2001. Modeling the Spatial and Temporal Distribution of Groundwater Recharge Across a Forested Watershed in northern Wisconsin. Dripps, W.R., Kucharik, C.J., Lenters, J.D., Anderson, M.P. and Foley, J.A.
38. North American Benthological Society, LaCrosse WI June, 2001. The impact of hydrology and agricultural activity on nitrate export by the Mississippi River. S.D. Donner, C.J. Kucharik, and J.A. Foley.
39. IGBP Global Change Open Science Conference, The Netherlands, 10-13 July, 2001. Testing the performance of a Dynamic Global Ecosystem Model: Water balance, carbon balance, and vegetation structure. C.J. Kucharik, J.A. Foley, C. Delire, N. Ramankutty.
40. IGBP Global Change Open Science Conference, The Netherlands, 10-13 July, 2001.
41. Applying Global Ecosystem Modeling Tools to Agriculture: Continental-Scale Food Production, Nitrate Export, and Precision Farming. C.J. Kucharik, K. Brye, S. Donner, and C. Molling.
42. Ecological Society of America Annual Meeting, - Madison WI, August 2001. Applying global ecosystem modeling tools to agriculture: continental-scale food production to precision-farming. C. Kucharik, K. Brye, C. Molling, and S. Donner.
43. Ecological Society of America Annual Meeting, - Madison WI, August 2001. Carbon sequestration in two restored prairie chronosequences on contrasting soils in southern Wisconsin. K. Brye and C. J. Kucharik.
44. Ecological Society of America Annual Meeting, - Madison WI, August 2001. The impact of hydrology and agricultural activity on nitrate export in the Mississippi River system. S. Donner, C. Kucharik, M.T. Coe, and J.A. Foley.
45. *American Geophysical Union* – Fall 2001 Meeting, San Francisco, CA. IBIS yield and nitrate loss predictions for maize agroecosystems receiving varied N-fertilizer. C.J. Kucharik and K.R. Brye.
46. *American Geophysical Union* – Fall 2001 Meeting, San Francisco, CA. Investigating the Effects of Land Cover Change on the Hydrology of the Mississippi River Basin. T. Twine, M.T. Coe, J.A. Foley, J. Lenters, and C.J. Kucharik.
47. *American Geophysical Union* – Fall 2001 Meeting, San Francisco, CA. Evaluating the impacts of climate variability and land management on nitrate export and crop production across the Upper Mississippi Basin. S. Donner and C.J. Kucharik

OTHER

- Over 20 media/press releases on research results
- Over 10 radio/video/TV interviews

REFERENCES

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