

CURRICULUM VITAE

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Research Interests

Soil-plant-atmosphere systems, biosphere-atmosphere interactions, global climate change, soil biogeochemistry, prairie-grassland ecology and restoration, remote sensing of the environment, forest canopy architecture, forest ecology, environmental biophysics, human influence on the biosphere, sustainable agriculture, yield-climate relationships, and carbon sequestration through improved land management

EDUCATION

B.S., Atmospheric Sciences, University of Wisconsin, 1992.
Ph.D., Atmospheric Sciences, University of Wisconsin, 1997 (minor soil sciences)

APPOINTMENTS

Associate Scientist; Center for Sustainability and the Global Environment – The Nelson Institute for Environmental Studies; University of Wisconsin-Madison 2004-present
Assistant Scientist; Center for Sustainability and the Global Environment – The Nelson Institute for Environmental Studies; University of Wisconsin-Madison 1999-2003
Research Associate; Department of Soil Science, University of Wisconsin-Madison, 1997-1999
Research Assistant; Department of Soil Science, University of Wisconsin-Madison, 1993-1997

PROFESSIONAL SERVICE

Member, American Geophysical Union (1996); Manuscript reviewer for *Global Change Biology*, *Global Biogeochemical Cycles*, *Frontiers in Ecology and Environment*, *Canadian Journal of Forest Research*, *The American Midland Naturalist*, *Agricultural and Forest Meteorology*, *J. of Hydrometeorology*, *Ecological Modelling*, *Soil Science Society of America Journal*, and *Earth Interactions*; Proposal Reviewer for NASA, DOE, and NSF

FUNDED RESEARCH AND PREVIOUS PROJECT MANAGEMENT EXPERIENCE

Human Activity and a Changing Biosphere, PI Jonathan A. Foley, Co-Is John M. Norman, Christopher J. Kucharik, Michael T. Coe, Navin Ramankutty, NASA-IDS. \$892,807. 05/01/00-04/30/04.

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. NASA-IDS, PI Jonathan A. Foley, Co-Is Carol Barford, Christopher J. Kucharik, Navin Ramankutty, \$902,434. 07/01/04-06/30/08.

Improving and Evaluating Dynamic Models of Natural and Managed Ecosystems over the Central and Southern U.S. Using Ameriflux and MODIS Data, PI Christopher J. Kucharik, Co-I Tracy E. Twine, University of Illinois, Department of Energy National Institute for Climate Change Research (NICCR), \$212,660. 09/01/05-09/14/07.

Impacts of Past and Future Changes in Climate and Atmospheric CO₂ on Wisconsin Agriculture, Christopher J. Kucharik, PI, Wisconsin Focus on Energy, \$80,134. 01/01/07-12/31/07.

Evaluating Integrated Models of Natural and Managed Ecosystems over the Central and Southeastern United States, PI Christopher J. Kucharik, Co-Is Jonathan Foley, Michael Coe, and Navin Ramankutty, Department of Energy, National Institute for Global Environmental Change (NIGEC), \$392,772. 09/01/01-08/31/05.

Promoting Carbon Sequestration and Land Conservation: A Local-Scale Initiative in Southern Wisconsin with Madison Gas and Electric Company, Christopher J. Kucharik, PI, University of Wisconsin Foundation, \$180,000. 01/02/02-present.

PUBLICATIONS IN PEER-REVIEWED LITERATURE

Kucharik, C.J. 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, in press.

- Kucharik, C.J. (2007). Impact of prairie age and soil order on carbon and nitrogen sequestration. The Soil Science Society of America Journal. 12 March 2007; doi:10.2136/sssaj2006.0074, 71: 430-441.
- 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.
- 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*, doi:10.1016/j.agrformet.2007.05.011.
- Kucharik, C.J. (2006). A multidecadal trend of earlier corn planting in the central USA. *Agron. J.* 98, 1544-1550.
- 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.
- 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
- 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.
- 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.
- 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*, 309: 570 - 574.
- 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.
- Kucharik, C.J. and N. Ramankutty (2005). Trends and Variability in U.S. Corn Yields Over the 20th Century. *Earth Interactions* 9, 1-29.
- 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.
- 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.
- 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.
- 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, 1267-1284, doi:10.1111.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- 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.
- Kucharik, C.J., J.M. Norman and S.T. Gower, 1999. Characterization of the radiation regimes in nonrandom forest canopies: theory, measurements, and a simplified modeling approach. *Tree Physiology*, 19: 695-706.
- Gower, S.T., J.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.
- 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.
- 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.