MICHAEL C. DIETZE

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Academic Positions

Boston University
Assistant Professor, Department of Earth and Environment,. 2012-present
Additional Affiliations: Biology

University of Illinois Urbana-Champaign
Adjunct Assistant Professor 2012-present
Assistant Professor, Department of Plant Biology,. 2008-2012.
Additional Affiliations: Natural Resources and Environmental Sciences, Institute for Genomic Biology, Energy Biosciences Institute

Harvard University
Postdoctoral Research Fellow, 2006 – 2008

Education

Duke University
Ph.D., Ecology, April 2006
Thesis: *Regeneration Dynamics in Large Forest Gaps*

Duke University
B.S., Biology, 2000

Grants

(12) S. Serbin, **M. Dietze**, P. Townshend. "Assimilation of imaging spectroscopy data to improve the representation of vegetation dynamics in ecosystem models" NASA Terrestrial Ecosystems, 03/2014-03/2017	$503,929
(11) K. McHenry, **M. Dietze**, J. Lee, P. Kumar, B. Minsker "CIF21 DIBBs – Brown Dog" NSF DIBBs 1261582, 11/2013-11/2018	$10,519,716
(10) C. Staudhammer, M. Binford, L. Boring, A. Desai, **M. Dietze**, P. Duffy, J. Franklin, G. Starr, P. Stoy "Collaborative Research: Building forest management into Earth system modeling: Scaling from stand to continent" NSF Macrosystems 1241894, 05/2013 - 04/2015	$1,212,300
(9) J. McLachlan, **M. Dietze**, P. Duffy, A. Finley, P. Higuera, M. Hooten, J. Marlon, D. Moore, N. Pederson, J. Williams, J. Zhu "Collaborative Research and NEON: PalEON2 – a PaleoEcological Observatory Network to assess terrestrial ecosystem models" NSF Macrosystems 1241891 05/2013-04/2018	$5,113,062
(8) **M. Dietze**, A. Leakey. "Sustainability of woody biofuel feedstocks" Energy Biosciences Institute 01/2012-12/2014.	$579,551
(7) J. Clark, **M. Dietze**, A. Finley, A Gelfand, J. Mohan, M. Uriarte. "Collaborative Research: Climate change impacts on forest biodiversity: individual risk to subcontinental impacts" NSF Macrosystems 1318164, 10/2011 to 9/2016	$4,273,484
(6) **M. Dietze**, C.E. Caceres, R.E. DeVille, M. Kantorovitz, Z. Rapti "UBM Group: Biomathematics Research and Training for Undergraduates at the University of Illinois Urbana-Champaign" NSF UBM 1129198, 08/2011 – 08/2014.	$239,586

(5) **M. Dietze**, A. Desai, K. McHenry. "Collaborative Proposal:ABI Innovation: Model-data synthesis and forecasting across the upper Midwest: Partitioning uncertainty and environmental heterogeneity ecosystem carbon" NSF ABI 1062547, 05/2011-05/2014. $770,653

(4) J. McLachlan, **M. Dietze**, C. Paciorek, J. Williams, S. Jackson, D. Foster. "Collaborative Research and NEON: PalEON – a PaleoEcological Observatory Network to assess terrestrial ecosystem models" NSF Macrosystems Biology 1346748. 05/2011-04/2013 $657,156

(3) F.S. Hu, M. Dietze, P. Higuera, P. Duffy. "Collaborative Research: Integrating paleoecological analysis and ecological modeling to elucidate the responses of tundra fire regime to climate change" NSF Arctic Systems Science 1023477. 08/2010-07/2014 $1,136,634

(2) **M. Dietze.** "Regional Biofuel Modeling" Energy Biosciences Institute. 01/2009-12/2011. $1,006,128

(1) **M. Dietze.** "Refined estimates of the eastern North American carbon budget: Multi-objective model calibration" NCSA Faculty Fellows Program, 8/2009-8/2010 $10,000

TOTAL $24,931,199

Publications

UNDERLINE DENOTES ADVISEE CO-AUTHOR

2015 (54) Medlyn, B, S Zaehle, M De Kauwe, A Walker, **M Dietze**, P Hanson, T Hickler, A Jain, Y Luo, W Parton, IC Prentice, P Thornton, S Wang, YP Wang, E Weng, C Iversen, H McCarthy, J Warren, R Oren, R Norby. 2015 "Using ecosystem experiments to improve vegetation models" Nature Climate Change

(53) Becknell, J.M., A.R. Desai, **M.C. Dietze**, G. Starr, J.F. Franklin, **A. Pourmokhtarian**, J. Hall, P.C. Stoy, P.A. Duffy, M.W. Binford, L.R. Boring, C.L. Staudhammer. Assessing the effects of interactions among changing climate, management, and disturbance on forests: A macrosystems approach. *In press*

(52) **Viskari T**, **B Hardiman**, A Desai, **M Dietze**. Model-data assimilation of multiple phenological observations to constrain and predict leaf area index. Ecological Applications *In press*

2014 (51) McHenry K, J Lee, **M Dietze**, P Kumar, B Minsker, R Marciano, L Marini, R Kooper, D Mattson. DIBBs Brown Dog, PaaS for SaaS for PaaS. Proceedings of XSEDE14

(50) **Dietze M, J Hatala Matthes.** A general ecophysiological framework for modeling the impact of pests and pathogens on forest ecosystems. Ecology Letters 17: 1418–1426.

(49) Matheny A, G Bohrer, P Stoy, I Baker, A Black, A Desai, **M Dietze**, C Gough, V Ivanov, P Jassal, K Novick, K Schäfer, H Verbeeck. Characterizing the diurnal patterns of errors in land-surface models' prediction of evapotranspiration: an NACP analysis. Journal of Geophysical Research – Biogeoscience *DOI: 10.1002/2014JG002623*

(48) Walker A, P Hanson, M De Kauwe, B Medlyn, S Zaehle, S Asao, **M Dietze**, T Hickler, C Huntingford, C Iversen, A Jain, M Lomas, Y Luo, H McCarthy, W Parton, IC Prentice, P Thornton, S Wang, Y-P Wang, D Warlind, E Weng, J Warren, I Woodward, R Oren, R Norby. Comprehensive ecosystem model-data synthesis using multiple datasets at two temperate forest free-air CO_2 enrichment experiments: model performance at ambient CO_2 concentration. Journal of Geophysical Research – Biogeoscience. *DOI: 10.1002/2013JG002553.*

(47) De Kauwe M, B Medlyn, S Zaehle, A Walker, S Asao, **M Dietze**, B El-Masri, T Hickler, A Jain, Y Luo, W Parton, IC Prentice, B Smith, P Thornton, S Wang, Y-P Wang, D Wårlind, E Weng, P Hanson. Where does the carbon go? A model-data intercomparison of carbon allocation at two temperate forest free-air CO2 enrichment sites. New Phytologist. *203: 883–899 doi: 10.1111/nph.12847*

(46) Fisher J, M Sikka, W Oechel, D Huntzinger, J Melton, C Koven, A Ahlström, A Arain, I Baker, J Chen, P Ciais, **C Davidson**, **M Dietze**, B El-Masri, D Hayes, C Huntingford, A Jain, P Levy, M Lomas, B Poulter, D Price, A Sahoo, K Schaefer, H Tian, E Tomelleri, H Verbeeck, N Viovy, R Wania, N Zeng, C Miller. 2014. Carbon cycle uncertainty in the Alaskan Arctic. Biogeosciences 11, 4271–4288. doi:10.5194/bg-11-4271-2014

(45) Niu S, Y Luo, **M Dietze**, T Keenan, Z Shi, J Li, FS Chapin III. 2014. The role of data assimilation in predictive ecology. Ecosphere, 5 (5):10.1890/ES13-00273.1

(44) **Dietze M**, **S Serbin**, **C Davidson**, A Desai, **X Feng**, **R Kelly**, R Kooper, **D LeBauer**, **J Mantooth**, K McHenry, **D Wang**. 2014. A quantitative assessment of a terrestrial biosphere model's data needs across North American biomes. Journal of Geophysical Research Biogeosciences 119, 286–300, doi:10.1002/ 2013JG002392.

(43) Zaehle S, B Medlyn, M De Kauwe, A Walker, **M Dietze**, T Hickler, Y Luo, Y-P Wang, B El-Masri, P Thornton, A Jain, S Wang, D Warlind, E Weng, W Parton, C Iversen, A Gallet-Budynek, H McCarthy, A Finzi, P Hanson, IC Prentice, R Oren, R Norby. 2014. Evaluation of 11 terrestrial carbon-nitrogen cycle models against observations from two temperate Free-Air CO2 Enrichment studies. New Phytologist 202: 803–822 doi: 10.1111/nph.12697

(42) **Dietze M**, A Sala, M Carbone, C Czimczik, **J Mantooth**, A Richardson, R Vargas 2014. Nonstructural carbon in woody plants. Annual Review in Plant Biology. DOI: 10.1146/annurev-arplant-050213-040054

2013 (41) Kooper R, K McHenry, **M Dietze**, **D LeBauer**, **S Serbin**, A. Desai. 2013. Ecological Cyberinfrastructure and HPC Towards More Accurately Predicting Future Levels of Greenhouse Gases. Proceedings of XSEDE13: Extreme Science and Engineering Discovery Environment

(40) **Wang D**, **D LeBauer**, G Kling, T Voigt, **M Dietze**. 2013. Ecophysiological screening of tree species for biomass production: trade-off between production and water use. Ecosphere 4 (11):10.1890/ES13-00156.1

(39) **Feng X**, **M Dietze**. 2013. Scale-dependence in the effects of leaf economic traits on photosynthesis: Bayesian parameterization of photosynthesis models. New Phytologist 200(4): 1132–1144 DOI: 10.1111/nph.12454

(38) **Urban M**, D Nelson, **R Kelly**, T Ibrahim, **M Dietze**, A Pearson, FS Hu. 2013. A hierarchical Bayesian approach to the classification of C3 and C4 grass pollen based on SPIRAL d13C data. Geochimica et Cosmochimica Acta. 121: 168-176

(37) **LeBauer D**, **M. Dietze**, B. Bolker. 2013. Translating Probability Density Functions: From R to BUGS and Back Again. R Journal Vol. 5/1, June, 207-209

(36) **Dietze M.** 2013. Gaps in knowledge and data driving uncertainty in models of photosynthesis. Photosynthesis Research 19:3-14 DOI: 10.1007/s11120-013-9836-z

(35) Stoy P, **M Dietze**, A Richardson ,R Vargas, A Barr, R Anderson, M Arain, I Baker, T Black, J. Chen, R Cook, C Gough, R Grant, D Hollinger, R Izaurralde, C Kucharik , P Lafleur, B Law, S Liu, E Lokupitiya, Y Luo, J Munger, C Peng, B Poulter, D Price, D Ricciuto, W Riley, A Sahoo, K Schaefer, C Schwalm, H Tian, H Verbeeck, E Weng. 2013. Evaluating the agreement between measurements and models of net ecosystem exchange at different times and time scales using wavelet coherence: an example using data from the North American Carbon Program Site-Level Interim Synthesis. Biogeoscience 10, 6893-6909 doi:10.5194/bgd-10-3039-2013

(34) De Kauwe M, B Medlyn, S Zaehle, A Walker, **M Dietze**, T Hickler, A Jain, Y Luo, W Parton, IC Prentice, B Smith, P Thornton, S Wang, Y-P Wang, D Warlind, E Weng, K Crous, D Ellsworth, P Hanson, H-S Kim, J Warren, R Oren, R Norby. 2013. Water use and water use efficiency at elevated CO2: a model-data intercomparison at two contrasting temperate forest FACE sites. 19(6): 1759–1779

(33) **Dietze M**, **D LeBauer**, R Kooper. 2013. On improving the communication between models and data. Plant, Cell, and Environment *36(9): 1575–1585*

(32) **Wang D**, **D LeBauer**, **M Dietze**. 2013. Predicted yields of short-rotation hybrid poplar (*Populus* spp.) for the contiguous US. Ecological Applications *23:944–958*

(31) **LeBauer D**, **D Wang**, K Richter, **C Davidson**, **M Dietze**. 2013. Feedbacks between measurements and models facilitated by scientific workflows. Ecological Monographs *83:133–154*

2012 (30) Schaefer K, C Schwalm, C Williams, M Arain, A Barr, J Chen, K Davis, D Dimitrov, T Hilton, D Hollinger, E Humphreys, B Poulter, B Raczka, A Richardson, A Sahoo, P Thornton, R Vargas, H Verbeeck, R Anderson, I Baker, A Black, P Bolstad, J Chen, P Curtis, A Desai, **M Dietze**, D Dragoni, C Gough, R Grant, L Gu, A Jain, C Kucharik, B Law, S Liu, E Lokipitiya, H Margolis, R Matamala, JH McCaughey, R Monson, JW Munger, W Oechel, C Peng, D Price, D Ricciuto, W Riley, N Roulet, H Tian, C Tonitto, M Torn, E Weng, X Zhou 2012. A Model-Data Comparison of Gross Primary Productivity: Results from the North American Carbon Program Site Synthesis. JGR-Biogeosciences 117:G03010 doi:10.1029/2012JG001960

(29) Davis S, **M Dietze**, E DeLucia, C Field, S Hamburg, S Loarie, W Parton, M Potts, B Ramage, **D Wang**, H Youngs, S Long. 2012. Harvesting carbon from eastern US forests. Forests 3(2), 370-397; doi:10.3390/f3020370

(28) Kumar J, **B Brooks**, P Thornton, **M Dietze**. 2012. Sub-daily Statistical Time Downscaling of Meteorological Variables Using Neural Networks. Procedia Computer Science 9: 887–896

(27) Keenan T, I Baker, A Barr, P Ciais, K Davis, **M Dietze**, D Dragoni, C Gough, R Grant, D Hollinger, K Hufkens, B Poulter, H Mccaughey, B Raczka, Y Ryu, K Schaefer, H Tian, H Verbeeck, M Zhao, A Richardson. 2012. Terrestrial biosphere model performance for inter-annual variability of land-atmosphere CO2 exchange Global Change Biology 18(6):1971–1987; doi: 10.1111/j.1365-2486.2012.02678.x

(26) Nair S, S Kang, X Zhang, F Miguez, R Izaurralde, W Post, **M Dietze**, L Lynd, S. Wullschleger. 2012. Bioenergy crop models: Descriptions, data requirements and future challenges. Global Change Biology Bioenergy 4(6): 620-633

(25) Richardson A, R Anderson, M Arain, A Barr, G Bohrer, G Chen, J Chen, P Ciais, K Davis, A Desai, **M Dietze**, D Dragoni, S Garrity, C Gough, R Grant, D Hollinger, H Margolis, H Mccaughey, M Migliavacca, R Monson, JW Munger, B Poulter, B Raczka, D Ricciuto, A Sahoo, K Schaefer, H Tian, R Vargas, H Verbeeck, J Xiao, Y Xue. 2012. Terrestrial biosphere models need better representation of vegetation phenology: Results from the North American Carbon Program Interim Synthesis. Global Change Biology 18, 566–584. *10.1111/j.1365-2486.2011.02562.x*

(24) **Wang D**, M Maughan, J Sun, **X Feng**, F Miguez, DK Lee, **M Dietze**. 2012. Impacts of nitrogen allocation on growth and photosynthesis of Miscanthus (*Miscanthus x giganteus*) Global Change Biology Bioenergy 4(6): 688-697

(23) Hicke J, C Allen, A Desai, **M Dietze**, R Hall, E Hogg, D Kashian, D Moore, K Raffa, R Sturrock, J Vogelmann. 2012. The effects of biotic disturbances on the North American carbon cycle. Global Change Biology 18: 7-34. DOI 10.1111/j.1365-2486.2011.02543.x

2011 (22) **Dietze M**, P Moorcroft. 2011. Tree mortality in the eastern and central U.S.: Patterns and drivers. Global Change Biology 17, 3312-3326.

(21) **Dietze M**, A Latimer. 2011. Forest Simulators. *Invited Chapter in:* Encyclopedia of Theoretical Ecology (A. Hastings and L. Gross, eds.), University of California Press, Berkeley, CA

(20) **Dietze M**, R Vargas, A Richardson, P Stoy, A Barr, Anderson, M Arain, I Baker, A Black, J Chen, P Ciais, L Flanagan, C Gough, R Grant, D Hollinger, RC Izaurralde, C Kucharik, P Lafleur, S Liu, E Lokupitiya, Y Luo, JW Munger, C Peng, B Poulter, D Price, D Ricciuto, W Riley, A Sahoo, K Schaefer, A Suyker, H Tian, C Tonitto, H Verbeeck, S Verma, W Wang, E Weng. 2011. Identifying the time scales that dominate model error: A North American synthesis of the spectral properties of ecosystem models. JGR-Biogeosciences 116, G04029, doi:10.1029/2011JG001661

(19) **Feng X**, **M Dietze**. 2011. Prairie yield, moisture and nitrogen content response to harvest time. Aspects of Applied Biology 112, Biomass and Energy Crops IV, 271-277

(18) **Hatala J**, **M. Dietze**, Interagency Whitebark Pine Monitoring Working Group, K Kendall, D Six, R Crabtree, P Moorcroft. 2011. An ecosystem model of white pine blister rust (Cronartium ribicola) spread in whitebark pine (Pinus albicaulis) of the Greater Yellowstone Ecosystem. Ecological Applications 21(4):1138-1153

(17) Miguez F, **M Dietze**, A Kemanian. 2011. Modeling tools and strategies for developing sustainable feedstock supplies. *Invited chapter in:* Sustainable Alternative Fuel Feedstock Opportunities, Challenges and Roadmaps for Six U.S. Regions. pp. 319-338

(16) **Wang D**, M Maughan, J Sun, **X Feng**, F Miguez, DK Lee, **M Dietze**. 2011. Impacts of canopy position and nitrogen on nitrogen allocation and photosynthesis of switchgrass (Panicum virgatum L.). Aspects of Applied Biology 112, Biomass and Energy Crops IV, 341-351.

2010 (15) Clark J, D Bell, C Chu, B Courbaud, **M Dietze**, M Hersh, J HilleRisLambers, I Ibanez, S LaDeau, S McMahon, J Metcalf, J Mohan, E Moran, L Pangle, S Pearson, C Salk, Z Shen, D Valle, and P Wyckoff. 2010. High Dimensional coexistence base on individual variation: a synthesis of evidence. Ecological Monographs 80(4):569-608

(14) Clark J, D Bell, **M Dietze**, M Hersh, I Ibanez, S LaDeau, S McMahon, J Metcalf, E Moran, L Pangle, M Wolosin. 2010. Models for demography of plant populations. in T. O'Hagan and M. West (eds) Handbook of Bayesian Analysis, Oxford University Press.

(13) Schwalm C, C Williams, K Schaefer, R Anderson, M Arain, I Baker, A Barr, TA Black, G Chen, J Chen, P Ciais, K Davis, A Desai, **M Dietze**, D Dragoni, M Fischer, L Flanagan, R Grant, L Gu, D Hollinger, RC Izaurralde, C Kucharik, P Lafleur, B Law, L Li, Z Li, S Liu, E Lokupitiya, Y Luo, S Ma, H Margolis, R Matamala, H McCaughey, R Monson, W Oechel, C Peng, B Poulter, D Price, D Riciutto, W Riley, A Sahoo, M Sprintsin, J Sun, H Tian, C Tonitto, H Verbeeck, S Verma. 2010. A model-data intercomparison of CO2 exchange across North America: Results from the North American Carbon Program site synthesis. Journal of Geophysical Research Biogeosciences VOL. 115, G00H0 doi:10.1029/2009JG001229

(12) **Wang D**, **D LeBauer**, **M Dietze**. 2010 A quantitative review comparing the yield of switchgrass in monocultures and mixtures in relation to climate and management factors. Global Change Biology Bioenergy. Global Change Biology Bioenergy 2(1): 16-25

2009 (11) Ibáñez I, J Clark, **M Dietze**. 2009. Estimating performance of potential migrant species. Global Change Biology. 15:1173-1188

(10) McMahon S, **M Dietze**, M Hersh, E Moran, J Clark. 2009. A predictive framework to understand forest responses to global change *Invited chapter in:* The Year in Ecology and Conservation Biology 1162:221-236

2008 (9) **Dietze M**, Clark J. 2008. Rethinking gap dynamics: the impact of damaged trees and sprouts. Ecological Monographs. 78(3):331-347.

(8) **Dietze** M, M Wolosin, J Clark. 2008. Tree allometries: capturing diversity using a Hierarchical Bayes approach. Forest Ecology and Management 256: 1939–1948. doi:10.1016/j.foreco.2008.07.034

(7) Ibáñez I, J Clark, **M Dietze**. 2008. Evaluating the sources of potential migrant species. Implications under climate change. Ecological Applications 18(7): 1664-1678.

2007 & Earlier

(6) Clark J, **M Dietze**, S Chakraborty, P Agarwal, I Ibanez, S LaDeau, M Wolosin. 2007. Resolving the biodiversity paradox. Ecology Letters 10(8): 647-659.

(5) Clark J, M Wolosin, **M Dietze**, I Ibanez, S LaDeau, M Welsh, B Kloeppel. 2007. Tree growth inference and prediction from diameter censuses and ring widths. Ecological Applications. *17(7): 1942-1953.*

(4) Govindarajan S, **M Dietze**, P Agarwal, J Clark. 2007. A scalable algorithm for dispersing populations. Journal of Intelligent Information Systems. 29(1):39-60

(3) Ibáñez I, J Clark, **M Dietze**, K Feeley, M Hersh, S LaDeau, A McBride, N Welch, M Wolosin. 2006. Predicting biodiversity change: Outside the climate envelope, beyond the species-area curve. Ecology 87(8): 1896–1906.

(2) Govindarajan S, **M Dietze**, P Agarwal, J Clark. 2004. A scalable model of forest dynamics. Proceedings of the ACM Symposium on Computational Geometry, 106-115.

(1) Clark J, **M Dietze**, I Ibanez, J Mohan. 2003. Coexistence: how to identify trophic tradeoffs. Ecology, 84:17-31.

In Review

(R7) Andrews T, **M Dietze**, B Booth. 2015. "Climate or disturbance: temperate forest structural change and carbon sink potential"

(R6) **Davidson C**, FS Hu, **D LeBauer**, **S Serbin**, **M Dietze**. Parameterization and Validation of the Ecosystem Demography Model for Alaskan Tundra through Model-Data Feedbacks and Iterative Data Assimilation *in review*

(R5) Hu FS, P Higuera, P Duffy, M Chipman, A Rocha, A Young, **R Kelly**, **M Dietze** "Tundra Fires in the Arctic: Natural Variability and Responses to Climate Change"

(R4) Goring S, J Williams, D Mladenoff, C Cogbill, S Record, C Paciorek, S Jackson, J McLachlan, **M Dietze**. Gridded Settlement Vegetation Data for the Upper Midwestern United States: Estimates Using the Public Land Survey *in review*

(R3) **Hatala Matthes J**, C Paciorek, S Goring, J Williams, **M Dietze**. Historic vegetation reconstruction benchmarks long-term carbon-climate feedbacks. *In review*

(R2) McMahon, S., J.S. Clark, H. Yu, M. **Dietze**, P. Agarwal. Forest biodiversity is not maintained by the immigration-extinction balance *In review*

(R1) Schlesinger et al. "Biogeochemical Cycling" in National Assessment of Drought Impacts on Forests *In review*

In Prep

Dietze, M., S. Govindarajan, S. Chakraborthy, J. Clark, and P. Agarwal. Are canopy gaps always bright: spatiotemporal variability in light limits the gap recruitment window. *In prep*

Dietze, M. and J. Clark. The role of individual variability in the response of saplings to large forest gaps. *In prep*

Dietze, M., A. Richardson, P. Moorcroft. Data-constraint and error propagation in a dynamic terrestrial biosphere model through Bayesian model emulation *in prep*

Dietze, M.C., P. Moorcroft. Does complex terrain matter for global terrestrial ecosystem models? Forest ecosystem dynamics in the White Mountains, NH. *In prep*

Feng X, **M Dietze**. Effects of photosynthetic capacity on community structure in tallgrass prairie *in prep*

Govindarajan S, S Chakraborty, P Agarwal, M **Dietze**, J Clark, M Wolosin. Light competition in forest canopies. *In prep*

Hardiman et al. Using PALSAR remote sensing to estimate forest biomass dynamics following disturbance. *in prep*

LeBauer et al. An open-access database containing plant trait, growth, and ecosystem service data from second-generation biofuels. in prep

McLachlan, J. et al. PalEON: A PaleoEcological Observatory Network to assess terrestrial ecosystem models *in prep*

Raczka et al. Identifying parametric sources of uncertainty to the improve the simulation of long term carbon sequestration in Northern Wisconsin. *In prep*

Undergrad first author **Shanks**, **Hardiman**, & **Dietze** "Reducing uncertainty in growth respiration through data synthesis: a Bayesian approach to pathways analysis" *In prep.*

Undergrad first author **Sharma**, **Mantooth**, & **Dietze** "Cross-site analysis of photosynthetic capacity and leaf economic traits of tree saplings in eastern US forests" *In prep.*

Workshops & working groups

North American Carbon Program "All Investigator Meeting 5" February 2015.
Member of **organizing committee** (April 2014 – ongoing).

EU COST Action FP1304 "Towards robust PROjections of European FOrests UNDer climate change (PROFOUND)", 2013-present
Working Group 2: Uncertainty of process and scaling issues
Working Group 3: Model comparisons and multi-model assessments

National Ecological Observatory Network Annual Meeting, October 2014, Boulder Colorado, **Primary organizer of 1 day workshop on ecological scaling**

Brown Dog Early Users Workshop, July 2014, Urbana, IL

"Climate-Change Induced Changes in Forest Disturbance Regimes and Their Interaction with Forests Managed under Contrasting Management Regimes", July 2014, Harvard Forest, Petersham, MA

NSF Macrosystems Biology Annual PI meeting, June 2014. Arlington VA

New Phytologist Trust Workshop, "Improving Representation of Photosynthesis in Earth System Models", April 2014, Montauk, NY

FORECAST RCN workshop, "Advancing Software for Ecological Forecasting", March 2014, Urbana, IL

National Assessment of Drought Impacts on Forests, US Forest Service, December 2013

American Geophysical Union Fall Meeting, December 2013
Co-organizer "Ecological Disturbance: Observing and Predicting the Impacts of Landscape Disturbance" 2 oral sessions, 1 poster session

MANDIFORE PI meeting, July 2013, Jones Center, GA

NSF Macrosystems Biology Annual PI meeting, June 2013. Arlington VA

North American Carbon Program "All Investigator Meeting 4" February 2013.
Member of **organizing committee** and **session chair**.
Organizer of breakout session on "Harnessing the 'long tail' of ecosystem carbon cycle observations: Approaches and challenges in synthesizing and assimilating non-automated and experimental data"

DIMACS Geological Data Fusion workshop, 2013, Rutgers, NJ

NSF workshop "Climate change and species interactions: ways forward" November 2012. Cary Institute

FORECAST RCN "Promoting New Perspectives on Data Assimilation in Global Change Science" October 2012

University of Illinois LAS Reflective Teaching Seminar (AY 2010-2011).

Paleo-Ecological Observatory Network (PalEON) workshops:
Kick-off meeting: **co-organizer**, May 2011.
Settlement-era vegetation meeting, October 2011, May 2013
Data-assimilation meeting: **co-organizer**, January 2012
Annual meeting: **co-organizer**, December 2012, 2013, 2014
Ecosystem modeling meeting: **co-organizer & host,** March 2014

National Ecological Observatory Network (NEON), Annual Meeting
- 4th Annual Meeting - September 2011
- 5th Annual Meeting - October 2012 (**invite presenter**)
- 6th Annual Meeting – October 2013
- 7th Annual Meeting – October 2014 (**workshop organizer)**

IAMCS Large-scale Inverse Problems Workshop, College Station, TX, February 2011

Energy Biosciences Institute "Harvesting Carbon from Eastern US Forests" **co-organizer**, December 2010

Ecological Society of America Annual Meeting. **Principal Organizer** of Oral Session "Forecasting Ecosystem Responses to Elevated CO2: Confronting Models with Long-Term CO2 Enrichment Experiments" August 2010

NSF Research Coordination Network: "Forecast of Resource and Environmental Changes: data Assimilation Science and Technology (FORECAST)" July 2010

iPlant Initiative, **advisory committee** on Tree Biology Cyberinfrastructure project, 2010-present

NCEAS Working Group "Benchmarking ecosystem response models with experimental data from long-term CO2 Enrichment Experiments" October 2008, May 2009

North American Carbon Program (NACP), Site-level model-data inter-comparison. Participant (2007-present) and workshop attendee (Jan 2009, November 2009)

"Rapid Directional Environmental Change" NSF Workshop. Arlington, VA. (Dec 2008)

"Data-model Assimilation in Ecology: Techniques and Applications". NSF Workshop. Norman, Oklahoma. October 2007.

"Program on Development, Assessment and Utilization of Complex Computer Models" Statistical and Applied Mathematical Sciences Institute (SAMSI). Research Triangle Park, NC. September 2006, April 2007.

"Regional and Global Models: A study in model sensitivities to various parameters" UCAR/NCAR Early Career Scientists Assembly (ECSA) Junior Faculty Forum on Future Scientific Directions (JFF). Boulder, Colorado. August 2006.

Summer Institute on Ecological Forecasting Workshop, Duke Center on Global Change, Durham, North Carolina. A two week program on modern statistical computing, decision making, and ecological forecasting. June 2004.

"Multi-Dimensional Forested Ecosystem Structure: Requirements for Remote Sensing Observations" NASA Workshop. Annapolis, Maryland. June 2003.

Teaching

Boston University	GE375 – Introduction to Quantitative Environmental Modeling Spring 2013, 2014
	GE585 – Ecological Forecasting and Informatics Fall 2013
University of Illinois	MATH/IB 199 – BioMath Seminar Fall 2010, 2011, Spring 2012
	IB / NRES 509 – Statistical Modeling Spring 2010, 2012
	IB 447 – Field Ecology Spring 2011
	IB 496 – Mathematical Modeling in Ecology and Evolution Fall 2009
	IB 100/101 – Biological Sciences Fall 2009, 2010, 2011
	IB 546 – Topics in Ecology and Evolution Fall 2010, Spring 2011, Fall 2011
Short Courses	"Summer Course in Flux Measurements and Advanced Modeling" Niwot Ridge Summer 2011, 2012, 2013, 2014

ESA workshop: "A Brief Introduction to Bayesian and Hierarchical Bayesian Modeling in Ecology"
Organizer: 2012-2014
Instructor: 2008-2011

PalEON Summer Course, "Assimilating Long-Term Data into Ecosystem Models"
University of Notre Dame Environmental Research Center - Summer 2012, 2014

Macrosystems Workshop: Integrating Evidence on Forest Response to Climate Change: Physiology to Regional Abundance, Duke University
May 13-14, 2013

Ecosystem Demography model workshop, Harvard University
2012, 2013

Harvard Ecology Discussion Group – organizer/moderator – 2007-2008

Teaching Assistant, Duke University. 2003-2004
Introduction to Ecology
Comparative Biomechanics
Ecological Models and Data

Mentoring Experience

Graduate Students:	Betsy Cowdery (2014 – present, PhD)
	Joshua Mantooth (2011 – present, PhD)
	Carl Davidson (2010 – 2012, MS)
	Xiaohui Feng (2009 – 2014, PhD)
	Matt Locus (2009, MS)
Postdoctoral fellows:	Christy Rollinson (starts August 2014)
	Afshin Pourmokhtarian (2013 – present)
	Jaclyn Hatala (2013-present)
	Toni Viskari (2013-present)
	Brady Hardimann (2012 – present)
	Bjorn Brooks (2011 – 2012)
	Shawn Serbin (2011 – 2012)
	David LeBauer (2009 - 2012)
	Dan Wang (2008 - 2012)
Graduate Committees:	Mustafa Saifuddin (2015 – present)
	Angela Rigden (2014 – present)
	Hollie Emery (2013 – present)
	Dan Gianotti (2013 – present)
	Travis Andrews (2013-present), Lehigh Univ.
	Claire Baldeck, Ph.D. (2008-2011), U. Illinois
	Ryan Kelly, Ph.D. (2009-2014) , U. Illinois
	Katie Heinman (2010-2012) , U. Illinois
	Zack Kron, M.S. (2009-2011) , U. Illinois
	Katie Richter, M.S. (2011) , U. Illinois
	Kelly Anderson, Ph.D. (2009) , U. Illinois
Visiting Scholars:	Brett Raczka (spring 2012), PhD Candidate, Penn State
	Lizzy Hare (fall 2013), Anthropology PhD Candidate, UC Santa Cruz
	Elizabeth Kearsley (summer 2014), PhD Candidate, U. Ghent
Undergraduate Independent Study:	Rani Murali (spring 2014)
	Lindsey Shanks (fall 2013, spring 2014)
	Mary Gianotti (fall 2013, spring 2014)
	Kshitij Sharma (summer & fall 2013)
	Jennifer Ruth (fall 2013)
	Thomas Azeizat (fall 2012, spring 2013)
	Nick Brady (fall 2011, spring 2012)
	Dan Dickson (spring 2010)
	Sen Lu (fall 2009)
Undergraduate Technicians:	9 current, 50+ total

Service

NASA Oak Ridge DAAC Advisory Board (2015 – present)
Research Computing Governance Committee, Boston University (2014-present)
Summer Lab, Upward Bound college prep program, (June 2014)
Admissions Committee, Earth and Environment, Boston University (2014)
QUEST (Quantifying Uncertainty in Ecosystem Studies) RCN
Statistical Advisory Board (2013-present)
NEON representative
Boston University (2012-present)
University of Illinois (2011- 2012),
Agricultural and Forest Meteorology
Editorial review board (2012-present)
Awards Committee, Program in Biogeosciences, Boston University (2013)
Graduate Affairs Committee, Department of Plant Biology, University of Illinois (2008-2012)
Awards Committee, School of Integrative Biology, University of Illinois (2011-2012)
Faculty Search Committee "Global Change Ecology", School of Integrative Biology, University of Illinois (2011-2012)
Seminar Committee, Program in Ecology, Evolution, and Conservation Biology, University of Illinois (2010-2012)
Grant Proposal Review Panels: NSF (2013), NASA (2014)
Grant proposal reviews: NSF, NERC (UK), Portuguese Foundation for Science and Technology, Indo-US Science and Technology Forum, Energy Biosciences Institute, University of Illinois Campus Research Board
Peer review of the book: Koricheva, J., J. Gurevitch, K. Mengersen. 2013. "Handbook of Meta-analysis in Ecology and Evolution", Princeton University Press
Reviewed manuscripts for: Agricultural and Forest Meteorology, Annals of Botany, Atmospheric Chemistry and Physics, Biogeosciences, Ecological Applications, Ecological Modelling, Ecological Monographs, Ecology Letters, Ecosystems, Frontiers in Ecology and the Environment, Geophysical Research Letters, GIScience, Global Change Biology, Global Change Biology Bioenergy, Journal of Biogeography, Journal of Geophysical Research, Journal of Ecology, Journal of Plant Ecology, Methods in Ecology and Evolution, Nature, New Phytologist, Oecologia, Photosynthesis Research, Plant Physiology, PLOS One, Theoretical Ecology, Tree Physiology.

Conference & Workshop Presentations

August 2015 – "Breaking the communication gaps: models talking with ecologists, the data, and each other." Ecological Society of America Annual Meeting, Baltimore MD **[INVITED]**
July 2015 – "Breaking the communication gaps: models talking with ecologists, the data, and each other." **[INVITED]**
March 2015 – "A Bayesian Data Analysis Activity to Produce Allometric Equations for Use by Harvard Forest Scientsts" Harvard Forest Annual Meeting
January 2015 – "The PEcAn Project: a scalable, multi-model platform for uncertainty quantification, analysis, and propagation" North American Carbon Program, Washington DC
January 2015 – "Carbon cycle data-model integration in the classroom" North American Carbon Program, Washington, DC (poster)
December 2014 – "Caught in the flux net: disentangling error, uncertainty, heterogeneity, and spatial process in biogeochemical scaling" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED]**
December 2014 – "Integrating Satellite and Tower Phenology: a case-study in real-time ecological forecasting" American Geophysical Union Fall Meeting, San Francisco, CA

November 2014 – "On The Communication between Models & Data" COST PROFOUND Workshop, Potsdam, Germany **[INVITED KEYNOTE]**

October 2014 – "Fires, invasives, migrations, oh my! Scaling spatial processes into earth system models and global change projections" NEON Annual Meeting, Boulder, CO

August 2014 – "Predicting phenology: a case-study in real-time ecological forecasting." Ecological Society of America Annual Meeting, Sacramento, CA

July 2014 – "Brown Dog Case Study: Long Tail Vegetation Data in Ecology and Global Change Biology" Brown Dog Early Users Workshop, Urbana, IL

June 2014 – "Informatics and data management" Macrosystems Biology Annual Meeting, Arlington, VA

March 2014 – "The PEcAn Project: Accessible ecoinformatic tools for carbon-cycle model-data analysis and assimilation" NSF FORECAST RCN, Workshop on ecological forecasting software

December 2013 – "Impact Of Diffuse Mortality In A Terrestrial Biosphere Model: Stress, Succession, And Disease" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED]**

December 2013 – "Fires, invasives, migrations, oh my! Scaling spatial processes into earth system models and global change projections" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED]**

August 2013 – "Assimilating forest inventory data into models" Ecological Society of America Annual Meeting, Minneapolis, MN

February 2013 – "PalEON: Synthesis, model validation, and data-assimilation on centennial time-scales" North American Carbon Program All-Investigators Meeting, Albuquerque NM

January 2013 – "Assimilating paleoecological data into land surface & biogeochemical models" DIMACS Geological Data Fusion workshop, Rutgers University, NJ **[INVITED]**

December 2012 – "What do we need to measure, how much, and where? A quantitative assessment of terrestrial data needs across North American biomes through data-model fusion and sampling optimization" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED]**

December 2012 – "The modeled effects of fire on carbon balance and vegetation abundance in Alaskan tundra" American Geophysical Union Fall Meeting, San Francisco, CA

October 2012 – "A Tale of Two Macrosystems Biology Projects" NEON Annual Meeting, Washington, DC

October 2012 – "The PEcAn Project: Carbon-Cycle Reanalysis Facilitated by Model-Data Ecoinformatics" RCN FORECAST Workshop, Woods Hole, MA **[INVITED]**

August 2012 – "Reconciling inventory, tower, and remotely-sensed carbon estimates across northern Wisconsin through model-data fusion." Ecological Society of America Annual Meeting, Portland, OR

September 2012 – "The PEcAn Project Carbon-Cycle Reanalysis Facilitated By Model-Data Ecoinformatics" MGHPCC Seed Fund 2012 Kickoff Meeting

June 2012 – "Challenges in ecosystem modeling and model-data fusion" Chequemegon Ecosystem Atmosphere Study, Kemp Biological Station, WI

May 2012 – "The PEcAn Project: Carbon-Cycle Reanalysis Facilitated by Model-Data Ecoinformatics" American Meteorological Society. First Meeting on Atmospheric Biogeochemistry. Boston, MA

December 2011 – "The PEcAn Project: Model-Data Ecoinformatics for the Observatory Era" American Geophysical Union Fall Meeting, San Francisco, CA

August 2011 – "Regional-scale impacts of climate and environmental variability on tree carbon reserves" Ecological Society of America Annual Meeting, Austin, TX

December 2010 – "Does complex terrain matter for global terrestrial ecosystem models?" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED UNION TALK]**

May 2011 – "Ecosystem Modeling in Paleoecology" Paleo-Ecological Observatory Network (PalEON) workshop, Petersham, MA

September 2010 – "Spectral Analysis" North American Carbon Program – Model Inter-comparison Workshop, Oak Ridge, TN

August 2010 – "How well are we modeling forest responses to elevated CO2? Results of the FACE/model inter-comparison project" Ecological Society of America Annual Meeting, Pittsburgh, PA, **[INVITED]**

May 2010 – "Seeing the Forest for the Trees: Data Resources on Forest Ecology and Global Change" iPlant Workshop on Tree Biology, Point Reyes Station, CA **[INVITED]**

December 2009 – "Beyond MCMC: Data-constraint and error propagation in a dynamic terrestrial biosphere model through Bayesian model emulation" American Geophysical Union Fall Meeting, San Francisco, CA **[INVITED]**

November 2009. North American Carbon Program – Model Inter-comparison Workshop, Oak Ridge, TN

September 2009 – "The effects of landscape-scale environmental heterogeneity on forest ecosystem dynamics in central New England" Ameriflux Annual meeting, Washington, DC (poster)

August 2009 – "The effects of landscape-scale environmental heterogeneity on forest community and ecosystem dynamics in central New England" Ecological Society of America Annual Meeting, Albuquerque, NM

February 2009 – "Incorporating landscape-scale edaphic variation into regional ecosystem forecasts using ED2" North American Carbon Program Meeting, San Diego, CA (poster)

August 2008 – "Drivers of tree mortality in the eastern and central U.S" Ecological Society of America Annual Meeting, Milwaukee, WI

April 2008 – "Hierarchical Bayes in Ecology" Hubbard Brook Committee of Scientists Meeting **[INVITED]**

March 2008 – "Incorporating landscape-scale edaphic variation into regional ecosystem forecasts using ED2" Harvard Forest Annual Symposium (poster)

August 2007 – "The role of landscape-scale edaphic variation in forecasting regional-scale forest ecosystem dynamics" Ecological Society of America Annual Meeting, San Jose, CA

April 2007 – "Forest Ecosystem Models" Statistical and Applied Mathematical Sciences Institute (SAMSI), Cary, NC

March 2007 – "Modeling Regional Carbon" Harvard Forest Annual Symposium, Petersham, MA

August 2006 – "Regeneration dynamics in large forest gaps: assessing the importance of resprouting" Ecological Society of America Annual Meeting, Memphis, TN

August 2005 – "Data assimilation, inference, and prediction in a hierarchical forest model" Ecological Society of America Annual Meeting, Montréal, Canada **[INVITED]**

August 2004 – "Light heterogeneity in forest gaps: the impact of damaged tree demography" Ecological Society of America Annual Meeting, Portland, Oregon

August 2003 – "North Atlantic Hurricane Disturbance: Current Patterns and Climatic Phases" Ecological Society of America Annual Meeting, Savannah, GA

July 2003 – "A comparison of factors affecting leaf-level drag in trees and shrubs" 4th Plant Biomechanics Conference, East Lansing, MI. (poster)

August 2002 – "Computational methods for ecological forecasting: Spatial models and algorithms" Ecological Society of America Annual Meeting, Tucson, AZ

August 2001 – "The Extinction Debt Revisited: Population Dynamics in a Point-Process Model" Ecological Society of America Annual Meeting, Madison, WI **[Lotka-Volterra Award winner]**

Invited Seminars

May 2015 – "Ecological Forecasting: from theory to practice" University of New Hampshire, Biology

April 2015 – Stony Brook University, Biology

March 2015 – "The PEcAn Project: A Community Platform for Ecological Synthesis & Forecasting" Montana State University, Biology
February 2015 – "Ecological Forecasting: From Theory to Practice" University of Florida, Wildlife Ecology and Conservation
October 2014 – "The PEcAn Project: A Community Platform for Synthesis & Forecasting of Ecosystems" Columbia University, E3B
October 2014 – "Ecological Forecasting: An Emerging Challenge" Boston University, Math and Statistics
September 2014 – "Terrestrial Ecosystems: Past, Present, & Future" Kent State University, Biology
September 2014 – "Terrestrial Ecosystems: Past, Present, & Future" Boston University, Earth and Environment
January 2014 – "The PEcAn Project: Accessible ecoinformatic tools for carbon-cycle model-data analysis and assimilation" The Ecosystem Center, Woods Hole Marine Biological Laboratory
June 2013 – "The PEcAn Project:Carbon-Cycle Reanalysis Facilitated by Model-Data Ecoinformatics" Harvard Forest Summer REU Program
May 2013 – "The PEcAn Project:Carbon-Cycle Reanalysis Facilitated by Model-Data Ecoinformatics" Harvard Forest Seminar Series
April 2013 – "The PEcAn Project:Carbon-Cycle Reanalysis Facilitated by Model-Data Ecoinformatics" Harvard ClimaTea Seminar Series
March 2013 – "Ecology in a Data Rich Era" Boston University EBE seminar series
February 2012 – "The Emerging Era of Ecological Forecasts: Feedbacks between models and data" Boston University, Department of Geography
January 2010 – "Global change impacts on tree mortality and east temperate forest dynamics" Ohio State University, EEOB seminar series
March 2009 – "Incorporating landscape-scale edaphic variation into regional ecosystem forecasts using ED2" University of New Hampshire, Complex Systems Research Center
March 2009 – "Incorporating landscape-scale edaphic variation into regional ecosystem forecasts using ED2" University of Vermont, Department of Plant Biology
March 2009 – "Regeneration Dynamics in Large Forest Gaps" Michigan State University, Department of Forestry
November 2008 – "Missing pieces? Tree mortality and regeneration" University of Illinois, Plant Biology Colloquium
October 2008 – "Biofuels and Ecosystem Services: Model-Data Synthesis" Energy Biosciences Institute
March 2008 – "Reassessing Paradigms of Forest Dynamics" University of Illinois, School of Integrative Biology
February 2007 – "Regeneration Dynamics in Large Forest Gaps" Harvard University OEB Seminar Series
October 2006 – "Regeneration Dynamics in Large Forest Gaps" Harvard Forest Seminar Series.
April 2006 "Regeneration Dynamics in Large Forest Gaps" Duke University.
September 2005 – "Shadow and light: heterogeneity in forest gaps" Harvard University

Affiliations

Ecological Society of America – 2000-present
American Geophysical Union – 2009-present
American Meteorological Society – 2012-present
Society for Conservation Biology – Duke Chapter, Executive Committee – 2001

Honors

Top 10 most downloaded Global Change Biology Bioenergy papers in 2012
Top 25 most downloaded Global Change Biology papers in 2012
Giles-Keever Award, Duke Ecology Program, 2002
Lotka-Volterra Award, Ecological Society of America Theoretical Ecology Section, 2001
Excellence in Botany Award, Duke Botany Dept, 2000
NSF Predoctoral Fellowship – Honorable Mention, 2000

Howard Hughes Biology Forum - Fellow, 1999