

MICHAEL C. DIETZE

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DEPARTMENT OF EARTH & ENVIRONMENT
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Academic Positions

Boston University

Associate Professor, Department of Earth and Environment,. 2015-present
Assistant Professor, Department of Earth and Environment,. 2012-2015
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

- | | |
|--|--------------|
| (14) M. Dietze , A. Desai, K. McHenry “Collaborative Research: ABI Development: The PEcAn Project: A Community Platform for Ecological Forecasting”
NSF ABI, 07/2015 – 06/2019 | \$487,861 |
| (13) Lapenas, A. et al. “IDBR: TYPE A : Collaborative Research: The NANAPHID: A novel aphid-like nanosensor network for real-time measurements of carbohydrates in live plant tissue”
NSF IDBR, 01/2015 – 01/2017 | \$33,818 |
| (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.	\$4,273,484
“Collaborative Research: Climate change impacts on forest biodiversity: individual risk to subcontinental impacts” NSF Macrosystems 1318164, 10/2011 to 9/2016	
(6) M. Dietze , C.E. Caceres, R.E. DeVille, M. Kantorovitz, Z. Rapti	\$239,586
“UBM Group: Biomathematics Research and Training for Undergraduates at the University of Illinois Urbana-Champaign” NSF UBM 1129198, 08/2011 – 08/2014.	
(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.	\$1,136,634
“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	
(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 (55) Hu, FS, P Higuera, P Duffy, M Chipman, A Rocha, A Young, R Kelly, **M Dietze**. 2015. “Tundra Fires in the Arctic: Natural Variability and Responses to Climate Change” *Frontiers in Ecology and the Environment* *in press*
- (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* 5:528-534 DOI: 10.1038/NCLIMATE2621
- (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. *Bioscience* 65(3):263-274
- (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* 25(2): 546-558
- 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 CO₂ enrichment experiments: model performance at ambient CO₂ 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 Warlind, 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 Lokupitiya, 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. Wullschlegel. 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 Izaurrealde, 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 Izaurrealde, 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 Ricciuto, 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
- (R6) Andrews T, **M Dietze**, B Booth. 2015. "Climate or disturbance: temperate forest structural change and carbon sink potential"
- (R5) **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*
- (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. Chakraborty, 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

Undergraduate Independent Study: Elizabeth Kearsley (summer 2014), PhD Candidate, U. Ghent
 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 Scientists” 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” Chequamegon 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