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Cathie and Tom Woteki Data Science Faculty Fellow
Co-director Virginia Tech Center for Ecosystem Forecasting
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1. EDUCATION

2012	Ph.D.	Ecosystem Ecology, Cornell University, Ithaca, NY
2007	M.S.	Natural Resources, University of New Hampshire, Durham, NH
2005	A.B.	Environmental Biology (High Honors), Dartmouth College, Hanover, NH

2. PROFESSIONAL APPOINTMENTS

2024 – present	Professor, Department of Forest Resources and Environmental Conservation, Virginia Tech, Blacksburg, VA
2024 – present	Professor, Department of Biological Sciences, Virginia Tech, Blacksburg, VA
2024 – present	Co-director of the Virginia Tech Center for Ecosystem Forecasting, Blacksburg, VA
2022 - present	Cathie and Tom Woteki Data Science Faculty Fellow, College of Science, Virginia Tech, Blacksburg, VA
2021- 2024	Associate Professor, Department of Biological Sciences, Virginia Tech, Blacksburg, VA
2019 - 2024	Associate Professor, Department of Forest Resources and Environmental Conservation, Virginia Tech, Blacksburg, VA
2022	Visiting Scientist, Terrestrial Ecosystem Research Network, University of Queensland, Brisbane, Australia
2021 - 2022	Visiting Scholar, Department of Biological Sciences, Dartmouth College, Hanover, NH
2013 - 2019	Assistant Professor, Department of Forest Resources and Environmental Conservation, Virginia Tech, Blacksburg, VA
2012 - 2013	Postdoctoral Scientist, National Center for Atmospheric Research, Boulder, CO

3. RESEARCH AND TEACHING INTERESTS

Ecosystem dynamics, ecological and Earth system modeling, environmental data science, forecasting, forest ecosystems, cyberinfrastructure, carbon cycling, water quality, land-atmosphere interactions, data assimilation, and open science.

4. PEER-REVIEWED PUBLICATIONS AND PROCEEDINGS

[G]denotes mentored graduate student; [P]denotes mentored post-doc; [U]denotes mentored undergraduate student

2026

1. Howard, D. W. , M.E. Lofton, R.Q. Thomas, A.D. Delany, A. Breef-Pilz, C.C. Carey. 2026. Near-term forecasts of dissolved organic matter exhibit consistent patterns of accuracy across multiple freshwater reservoirs. *JGR-Biogeosciences* 131:e2025JG009064 https://doi.org/10.1029/2025JG009064
2. Carey, C.C., F. Olsson[P], A. Breef-Pilz, R.Q. Thomas. High-frequency monitoring data reveal substantial variability in the intrinsic predictability of ecosystem dynamics. Accepted at *Ecology.* Pre-print at: http://dx.doi.org/10.22541/essoar.174231657.71904682/v1

2025

3. Wander, H., M.E. Lofton[P], J.P. Doubek, D.W. Howard, M.R. Hipsey, R.Q. Thomas, and C.C. Carey. 2025. Warming air temperatures alter the timing and magnitude of reservoir zooplankton biomass. *Ecological Modeling* 509:111272. https://doi.org/10.1016/j.ecolmodel.2025.111272.
4. Paíza, R., R.Q. Thomas, C. C. Carey, E. de Eyto, A. Delany, R. Poole, P. Nixon, M. Dillane, I.D. Jones, D.C. Pierson, V. McCarthy, S. Linnane, E. Jennings. 2025. Near-term lake water temperature forecasts can be used to anticipate the ecological dynamics of freshwater species. *Ecosphere* 16: e70335. http://dx.doi.org/10.1002/ecs2.70335
5. Holthuijzen, M.F.[P], R.B. Gramacy, C.C. Carey, D.M. Higdon, and R.Q. Thomas. 2025. Synthesizing data products, mathematical models, and observational measurements for lake temperature forecasting. *Annals of Applied Statistics* 19: 1127-1146 https://doi.org/10.1214/25-AOAS2027
6. Lofton, M.E.[P], T.N. Moore[P], W.M. Woelmer[G], R.Q. Thomas, and C.C. Carey. 2025. A modular curriculum to teach undergraduates ecological forecasting improves student and instructor confidence in their data science skills. *Bioscience* 75: 127-138. https://doi.org/10.1093/biosci/biae089
   - Winner of the Ecological Forecasting Outstanding Publication award in 2025 from the Ecological Society of America.
7. Olsson, F.[P], C.C. Carey, C. Boettiger, G. Harrison, R. Ladwig, M.F. Lapeyrolerie, A.S.L. Lewis, M.E. Lofton[P], F. Motealegre-Mora, J.S. Rebaey, C.J. Robbins. X. Yang, and R.Q. Thomas. 2025. What can we learn from 100,000 freshwater forecasts? A synthesis from the NEON Ecological Forecasting Challenge. *Ecological Applications*. 35:e70004 https://doi.org/10.1002/eap.70004
8. Carey, C.C., R. S.D. Calder, R.J. Figueiredo, R.B. Gramacy, M.E. Lofton[P], M.E. Schreiber and R.Q. Thomas. 2025. A blueprint for developing a real-time lake

phytoplankton forecasting system to support water quality management in the face of global change. *Ambio* 25: 475–487. https://doi.org/10.1007/s13280-024-02076-7

2024

9. Olsson F[P], C. Boettiger, C.C. Carey, M. Lofton[P] and RQ Thomas. 2024. Can you predict the future? A tutorial for the National Ecological Observatory Network Ecological Forecasting Challenge. *Journal of Open Source Education* 7: 259. https://doi.org/10.21105/jose.00259
10. Park, S., Y.-J. Ku, V. Daneshmand, R.Q. Thomas, C.C. Carey, R.J. Figueredo. 2024. FaaSr: R package for Function-as-a-Service. *Journal of Open Source Software* 9: 7027 https://doi.org/10.21105/joss.07027
11. Dalton, J.N. Miller, T.L. Greaver, R.D. Sabo, K. G. Austin, J.N. Phelan, R.Q. Thomas and C. Clark. 2024. Regional variation in growth and survival responses to atmospheric nitrogen and sulfur deposition for 140 tree species across the United States. *Frontiers in Forests and Global Change* 7:1426644. https://doi.org/10.3389/ffgc.2024.1426644
12. Dietze, M., E.P. White, A. Abeyta, C. Boettiger, N. Bueno Watts, C.C. Carey, R. Chaplin-Kramer, R.E. Emanuel, S.K. Morgan Ernest, R. Figueiredo, M.D, Gerst, L.R. Johnson, M.A. Kenney, J.S. McLachlan, I.C. Paschalidis, J.A. Peters, C.R. Rollinson, J. Simonis, K. Sullivan-Way, R. Q. Thomas, G.M. Wardle, A. Willson, J. Zwart. 2024. Near-term Ecological Forecasting for Climate Change Action. *Nature Climate Change* 14: 1236–1244 https://doi.org/10.1038/s41558-024-02182-0
13. Clark, C. M., J. G. Coughlin, J. Phelan, K. Austin, M. Salem, G. Martin, R. Sabo, K. Horn, R.Q. Thomas, and R. Dalton. 2024. Winners and losers in the climate roulette: A national analysis of tree growth and survival responses to temperature and precipitation. *Global Change Biology* 30: e17597. https://doi.org/10.1111/gcb.17597
14. Woelmer, W.M., R.Q. Thomas, F. Olsson, B.G. Steele, K.C. Weathers, and C.C. Carey. 2024. Process-Based Forecasts of Lake Water Temperature and Dissolved Oxygen Outperform Null Models, with Variability Over Time and Depth. *Ecological Informatics* 83: 102825. https://doi.org/10.1016/j.ecoinf.2024.102825
15. Park, S., R.Q. Thomas, C.C. Carey, A.D. Delany, Y.-J. Ku, M.E. Lofton[P], and R.J. Figueiredo. 2024. "FaaSr: Middleware for Serverless and Cross-Platform Function-as-a-Service Scientific Workflows in R" in *2024 IEEE 20th International Conference on e-Science (e-Science)*, Osaka, Japan, 2024 pp. 1-10. https://doi.org/10.1109/e-Science62913.2024.10678660
16. Phelan J, G. Van Houtven, C Clark, J. Buckley, J. Cajka, A. Hargrave, K. Horn[P], R.Q. Thomas and R. Sabo. 2024. Climate Change Could Negate U.S. Forest Ecosystem Services Benefits Gained Through Reductions in Nitrogen and Sulfur Deposition. *Scientific Reports* 14: 10767 https://doi.org/10.1038/s41598-024-60652-z
17. Olsson, F.[P], Moore, T. [P], Carey, C., Breef-Pilz, A., and Thomas, R. Q. 2024. A multi-model ensemble of empirical and process-based models improves the predictive skill of near-term lake forecasts. *Water Resources Research* 60: e2023WR035901. https://doi.org/10.1029/2023WR035901
18. Wander, H.L., R.Q. Thomas, T.N. Moore[P], M.E. Lofton[P], A. Breef-Pilz, C.C. Carey. 2024. Data assimilation experiments inform monitoring needs for near-term ecological forecasts in a eutrophic reservoir. *Ecosphere* 15: e4752. https://doi.org/10.1002/ecs2.4752

19. McNellis, R., N. Smith, R.Q. Thomas, and N. van Gestel. 2024. Winter cover cropping increases albedo and latent heat flux in a Texas High Plains agro-ecosystem. *Ecosphere* 15: e4753 https://doi.org/10.1002/ecs2.4753
20. Wheeler, K., M. Dietze, D. LeBauer, J. Peters, A.D. Richardson, R.Q. Thomas, K. Zhu, U. Bhat, S. Munch, R.F Buzbee, M. Chen, B. Goldstein, J.S. Guo, D. Hao, C. Jones, M. Kelly-Fair, H. Liu, C. Malmborg, N. Neupane. D. Pal, A. Ross, V. Shirey, Y. Song, M. Steen, E.A. Vance, W.M. Woelmer, J. Wynne and L. Zachmann. 2024. Predicting Spring Phenology in Deciduous Broadleaf Forests: An Open Community Forecast Challenge. *Agricultural and Forest Meteorology* 345: 09810 https://doi.org/10.1016/j.agrformet.2023.109810
21. Meyer, M.F., M.E. Harlan, R.T. Hensley, Q. Zhan, N.S. Börekçi, T. Bucak, A.N. Cramer, J.Feldbauer, R. Ladwig, J.P. Mesman, I.A. Oleksy, R.M. Pilla, J.A. Zwart, E. Calamita, N.J. Gubbins, M.E. Lofton, D.A. Maciel, N.S. Marzolf, F. Olsson[P], A.N. Thellman, R.Q. Thomas, M.J. Vlah. 2024. Hacking Limnology Workshops and DSOS23: Growing a Workforce for the Nexus of Data Science, Open Science, and the Aquatic Sciences. *Limnology and Oceanography Bulletin* 33: 35-38. https://doi.org/10.1002/lob.10607

2023

22. Wynne, J. H., W. M. Woelmer, T. N. Moore, R.Q. Thomas, K C. Weathers, and C. C. Carey. 2023. Uncertainty in projections of future lake thermal dynamics is differentially driven by global climate models and lake models. *PeerJ* 11:e15445 https://doi.org/10.7717/peerj.15445
23. Clark, C.M., J. Phelan, J. Ash, J. Buckley, J. Cajka, K. HornP, R.Q. Thomas, R. Sabo. 2023. Future climate change effects on U.S. forest composition may offset benefits of reduced atmospheric deposition of N and S. *Global Change Biology* 29:4793-4810 http://doi.org/10.1111/gcb.16817
24. Smith, J.W.[G], L.R. Johnson, and R.Q. Thomas. 2023. Parameterizing Lognormal state space models using moment matching. *Environmental and Ecological Statistics* 30: 385-419. https://doi.org/10.1007/s10651-023-00570-x
25. Dietze, M., R.Q. Thomas, J. Peters, C. Boettiger, A. Shiklomanov, and J. Ashander. 2023. A community convention for ecological forecasting: output files and metadata v1.0. *Ecosphere* 14: e4686 https://doi.org/10.1002/ecs2.4686
26. Wilson A.M., H. Gallo, J.A. Peters, A. Abeyta, N.B. Watts, C.C. Carey, T.N. Moore[P], G Smies, R.Q. Thomas, W.M. Woelmer[G], J.S. McLachlan. 2023. Assessing opportunities and inequities in undergraduate ecological forecasting education. *Ecology and Evolution* 13: e10001. https://doi.org/10.1002/ece3.10001
27. Hounshell, A.G., B. M. D'Acunha, A. Breef-Pilz, M.S. Johnson, R.Q. Thomas, C.C. Carey. 2023. Eddy covariance data reveal that a small freshwater reservoir emits a substantial amount of carbon dioxide and methane. *Journal Geophysical Research - Biogeosciences* 128: e2022JG007091 https://doi.org/10.1029/2022JG007091
28. Thomas, R.Q., C. Boettiger, C.C. Carey, M.C. Dietze, L.R. Johnson, M.A. Kenney, J.S. McLachlan, J.A. Peters, E.R. Sokol, J.F. Weltzin, A. Willson, W M. Woelmer[G], and Challenge contributors. 2023. The NEON Ecological Forecasting Challenge. *Frontiers in Ecology and Environment* 21:112-113 https://doi.org/10.1002/fee.2616
29. Clark, C.M., R.Q. Thomas, and K.J. Horn[P]. 2023. Above-ground tree carbon storage in response to nitrogen deposition in the U.S. is heterogeneous and may have weakened.

Communications Earth & Environment 4: 35 https://doi.org/10.1038/s43247-023-00677-w

30. Smith, J.W.[G], L.R. Johnson, and R.Q. Thomas. 2023. Assessing Ecosystem State Space Models: Identifiability and Estimation. *Journal of Agricultural, Biological and Environmental Statistics* 28: 442–465 https://doi.org/10.1007/s13253-023-00531-8
31. Lofton, M.E.[P], D.W. Howard[G], R.Q. Thomas, and C. C Carey. 2023. Progress and opportunities in advancing near-term forecasting of freshwater quality. *Global Change Biology* 29: 1691-1714 https://doi.org/10.1111/gcb.16590
32. Thomas, R.Q, R.P. McClure[P], T.N. Moore[P], W.M. Woelmer[G], C. Boettiger, R.J. Figueiredo, R.T. Hensley, C.C. Carey. 2023. Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S. *Frontiers in Ecology and Environmen*t. 21: 220–226 https://doi.org/10.1002/fee.2623

2022

33. Moore, T.N.[P], R.Q. Thomas, W.M. Woelmer[G], C.C. Carey. 2022. Integrating ecological forecasting into undergraduate ecology curricula with an R Shiny application-based teaching module. *Forecasting* 4:604-633. https://doi.org/10.3390/forecast4030033
34. Carey, C.C., P.C. Hanson, R.Q. Thomas, A.B. Gerling, A.G. Hounshell, A.S.L Lewis[G], M.E. Lofton[P], R.P. McClure[P], H.L. Wander[G], W.M. Woelmer[G], B.R. Niederlehner, M.E. Schreiber. 2022. Anoxia decreases the magnitude of the carbon, nitrogen, and phosphorus sink in freshwater ecosystems. *Global Change Biology* 28:4861-4881 https://doi.org/10.1111/gcb.16228
35. Ahlswede, B.J.[G], T.L. O'Halloran, and R.Q. Thomas. 2022. Combined carbon and albedo climate forcing from pine and switchgrass grown for bioenergy. *Frontiers in Forests and Global Change* 5:774067. https://doi.org/10.3389/ffgc.2022.774067
36. Woelmer, W.[G], R.Q. Thomas, M. Lofton, R. McClure[P], and C.C Carey. 2022. Near-term phytoplankton forecasts reveal the effects of model time step and forecast horizon on predictability. *Ecological Applications* 32*:* e2642. https://doi.org/10.1002/eap.2642
37. Lewis, A.[G], W. Woelmer[G], H. Wander[G], D. Howard, J. Smith[G], R. McClure[P], M. Lofton, N. Hammond, R. Corrigan[G], R.Q. Thomas, C.C. Carey. 2022. Increased adoption of best practices in ecological forecasting enables comparisons of forecastability across systems. at *Ecological Applications* 32: e02500. https://doi.org/10.1002/eap.2500
38. Kyker-Snowman, E., D.L. Lombardozzi, G.B. Bonan, S.J. Cheng, J.S. Dukes, S.D. Frey, E.M. Jacobs, R. McNellis[G], J.M. Rady[G], N.G. Smith, R.Q. Thomas, W.R. Wider, and A.S. Grandy. 2022. Increasing the spatial and temporal impact of ecological research: A roadmap for integrating a novel terrestrial process into an Earth system model. *Global Change Biology* 28: 665-684. https://doi.org/10.1111/gcb.15894
- Accompanying peer-reviewed commentary: https://doi.org/10.1111/gcb.15915
39. Ahlswede, B.J.[G], T.L. O'Halloran, J. Forsythe[G], and R.Q. Thomas. 2022. A minimally managed switchgrass ecosystem in a humid subtropical climate is a source of carbon to the atmosphere. *Global Change Biology - Bioenergy.* 14: 665-684. https://doi.org/10.1111/GCBB.12897
40. Carey C.C, W.M. Woelmer[G], M.E. Lofton, R.J. Figueiredo, B.J. Bookout, R.S. Corrigan[G], V. Daneshmand[G], A.G. Hounshell, D.W. Howard, A.S. Lewis, R.P. McClure[G], H.L. Wander[G], N.K. Ward, and R.Q. Thomas. 2022. Advancing lake and

reservoir water quality management with near-term, iterative ecological forecasting. *Inland Waters* 12: 107-120 https://doi.org/10.1080/20442041.2020.1816421

2021

41. McClure, R.P [P], R.Q. Thomas, M.E. Lofton [P], W.M. Woelmer [G] and C.C. Carey. 2021. Iterative forecasting improves near-term predictions of methane ebullition rates. *Frontiers in Environmental Science* 9:756603. https://doi.org/10.3389/fenvs.2021.756603
42. Peters, J. and R.Q. Thomas. 2021. Going Virtual: What We Learned from the Ecological Forecasting Initiative Research Coordination Network Virtual Workshop. *Bulletin of the Ecological Society of America* 102: e01828 https://doi.org/10.1002/bes2.1828
43. Meyer, M. F., R. Ladwig, H.A. Dugan, A. Anderson, A.R. Bah, B. Boehrer, L. Borre, R.J. Chapina, C. Doyle, E.J. Favot, G. Flaim, P. Forsberg, P.C. Hanson, B.W. Ibelings, P. Isles, F-P Lin, D. Lofton, T.N. Moore, S. Peel, J.A. Peters, D. Peirson, L.N. de Senerpont Domis, J.A. Schloss, M. Shikhani, A.P. Smagula, J.D. Stockwell, P. Thomas, R.Q. Thomas, T. Tietjen, and K.C. Weathers. 2021. Virtual Growing Pains: Initial Lessons Learned from Organizing Virtual Workshops, Summits, Conferences, and Networking Events during a Global Pandemic. *Limnology and Oceanography Bulletin* 30: 1- 11. https://doi.org/10.1002/lob.10431
44. Daneshmand, V., A. Breef-Pilz, C.C. Carey, Y. Jin, Y.-J. Kun, K.C., R.Q. Thomas, R.J. Figueiredo. 2021 "Edge-to-cloud Virtualized Cyberinfrastructure for Near Real-time Water Quality Forecasting in Lakes and Reservoirs" in *2021 IEEE 17th International Conference on eScience (eScience)*, Innsbruck, Austria, 2021 pp. 138-148. https://doi.org/10.1109/eScience51609.2021.00024
45. Graham, M.W.[G], R.Q. Thomas, D.L. Lombardozzi, and M.E. O'Rourke. 2021. Modest capacity of no-till farming to offset emissions over 21st century. *Environmental Research Letters* 16: 054055. https://doi.org/10.1088/1748-9326/abe6c6
46. Koplitz, S.N., C.G. Nolte, R.D. Sabo, C.M. Clark, K.J. Horn[P], R.Q. Thomas, and T.A. Newcomer-Johnson. 2021. The contribution of wildland fire emissions to nitrogen and sulfur deposition in the contiguous U.S.: Implications for tree growth and survival in the Northwest. *Environmental Research Letters* 16: 024028. https://doi.org/10.1088/1748-9326/abd26e
47. Thomas, V.A., R.H. Wynne, J. Kauffman, W. McCurdy[G], E.B. Brooks, R.Q. Thomas, and J. Rakestraw. 2021. Mapping thins to identify active forest management in southern pine plantations using Landsat time series stacks. *Remote Sensing of Environment* 252: 112127. https://doi.org/10.1016/j.rse.2020.112127

2020

48. Thomas R.Q., R.J. Figueiredo, V. Daneshmand[G], B.J. Bookout, L.K. Puckett[U], and C.C. Carey. 2020. A near-term iterative forecasting system successfully predicts reservoir hydrodynamics and partitions uncertainty in real time. *Water Resources Research* 56: e2019WR026138. https://doi.org/10.1029/2019WR026138
49. Daw, A., R.Q. Thomas, C.C. Carey, J.S. Read, A.P. Appling, and A. Karpatne. 2020. "Physics-guided architecture (PGA) of neural networks for quantifying uncertainty in lake temperature modeling" in *Proceedings of the 2020 SIAM International Conference on Data Mining*: 532-540. https://doi.org/10.1137/1.9781611976236.60

50. Weaver, E.A. [G], K. Kolivras, V.A. Thomas, R.Q. Thomas, and K. Abbas. 2020. Environmental factors affecting ecological niche of *Coccidioides* (spp.) and spatial dynamics of valley fever in the United States. *Spatial and Spatio-temporal Epidemiology* 32: 100317. https://doi.org/10.1016/j.sste.2019.100317

2019

51. Lawrence, D.M., et al. [52 authors including R.Q. Thomas]. 2019. The Community Land Model version 5: Description of new features, benchmarking, and impact of forcing uncertainty. *Journal of Advances in Modeling Earth Systems* 11: 4245-4287. https://doi.org/10.1029/2018MS001583
- Web of Science Highly Cited Paper: top 1% in Geoscience

52. Thomas, R.Q., M. Williams, M.A. Cavaleri, J.-F. Exbrayat, T.L. Smallman, and L.E. Street. 2019. Alternate trait-based leaf respiration schemes evaluated at ecosystem-scale through carbon optimization modeling and canopy property data. *Journal of Advances in Modeling Earth Systems* 11: 4629-4644. https://doi.org/10.1029/2019MS001679
53. Wieder, W.R., D.M. Lawrence, R.A. Fisher, G.B. Bonan, S.J. Cheng, C.L. Goodale, C.D. Koven, D.L. Lombardozzi, K.W. Oleson, and R.Q. Thomas. 2019. Beyond static benchmarking: Evaluating model assumptions with experimental manipulations. *Global Biogeochemical Cycles* 33: 1289 – 1309. https://doi.org/10.1029/2018GB006141
54. Song, J.J., S. Wan, S. Piao, A.K. Knapp, A.T. Classen, S. Vicca, P. Ciais, M. Hovenden, S. Leuzinger, C. Beier, P. Kardo, J, Xia, Q. Liu, J. Ru, Z. Zhou, Y. Luo, D. Guo, J. A. Langley, J. Zscheischler, J.S. Dukes, J. Tang, J. Chen, K.S. Hofmocke, L.M. Kueppers, L. Rustad, L. Liu, M.D. Smith, P.H. Templer, R.Q. Thomas, R.J. Norby, R.P. Phillips, S. Niu, S. Fatichi, Y. Wang, D. Wang, L. Lei, J. Wang, X. Li, Q. Zhang, H. Han, P. Shao, X. Li, F. Su, B. Liu, F. Yang, G. Ma, G. Li, Y. Liu, Y. Liu, Z. Yang, K. Zhang, Y. Miao, M. Hu, C. Yan, A. Zhang, M. Zhong, Y. Hui, Y. Li, M. Zheng. 2019. A meta-analysis of 1,119 manipulative experiments on terrestrial carbon-cycling responses to global change. *Nature Ecology and Evolution* 3, 1309 – 1320. https://doi.org/10.1038/s41559-019-0958-3
55. Cheng, S.J., P. Hess, W.R. Wieder, R.Q. Thomas, K.J. Nadelhoffer, and C.L. Goodale. 2019. Decadal fates and impacts of nitrogen additions on temperate forest carbon storage: a data–model comparison. *Biogeosciences* 16: 2771-2793. https://doi.org/10.5194/bg-16-2771-2019
56. Van Houtven, G., J.N. Phelan, C.M. Clark, R. Sabo, J. Buckley, R.Q. Thomas, K.J. Horn[P], and S.D. LeDuc. 2019. Nitrogen deposition and climate change effects on tree species composition and ecosystem services: A cohort analysis. *Ecological Monographs* 89: e01345. https://doi.org/10.1002/ecm.1345

2018

57. Jinshi, J.[G], M.K. Steele, S. Day, and R.Q. Thomas. 2018. Future global soil respiration rates will swell despite regional decreases in temperature sensitivity caused by rising temperatures. *Earth's Future* 6: 1539 – 1554. https://doi.org/10.1029/2018EF000937
58. Horn, K.J.[P], R.Q. Thomas, C.M. Clark, L.H. Pardo, M.E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. 2018. Growth and survival relationships of 94 tree species with nitrogen and sulfur deposition across the

conterminous U.S. *PLoS ONE* 13: e0205296. https://doi.org/10.1371/journal.pone.0205296

- Top 10% most cited PLOS ONE papers published in 2018

59. Chu, H., D.D. Baldocchi, C. Poindexter, M. Abraha, A. Desai, G. Bohrer, A. Arain, T. Griffis, P. Blanken, T. O'Halloran, R.Q. Thomas, Q. Zhang, S. Burns, D. Christian, S. Brown, A. Black, C. Gough, B. E. Law, X. Lee, Ji. Chen, D. Reed, K. Clark, J. Hatfield, J. Prueger, R. Bracho, and T.A. Martin. 2018. Temporal dynamics of aerodynamic canopy height derived from eddy covariance momentum data collected across North American Flux Networks. *Geophysical Research Letters* 45: 9275-9287. https://doi.org/10.1029/2018GL079306
60. Thomas. R.Q., A.L. Jersild[G], E.B. Brooks, V.A. Thomas, and R.H. Wynne. 2018. A mid-century ecological forecast with partitioned uncertainty predicts increases in loblolly pine forest productivity. *Ecological Applications.* 28: 1503-1519. https://doi.org/10.1002/eap.1761
61. Jian, J.[G], M.K. Steele, S.D. Day, R.Q. Thomas, and S.C. Hodges. 2018. Measurement strategies to account for soil respiration temporal heterogeneity across diverse regions. *Soil Biology and Biochemistry* 125: 167-177. https://doi.org/10.1016/j.soilbio.2018.07.003
62. Jian, J.[G], M.K. Steele, R.Q. Thomas, S. Day, and S. Hodges. 2018. Constraining global soil respiration by quantifying sources of uncertainty. *Global Change Biology* 24: 4143 – 4159. https://doi.org/10.1111/gcb.14301

2017

63. Ahlswede, B.J.,[G] and R.Q. Thomas. 2017. Community Earth system model simulations reveal the relative importance of afforestation and forest management to surface temperature in eastern North America. *Forests* 8: 499. https://doi.org/10.3390/f8120499
64. Thomas, R.Q., E.B. Brooks, A.L. Jersild [G], E.J. Ward, R.H. Wynne, T.J. Albaugh, H.D. Aldridge, H.E. Burkhart, J.-C. Domec, T.R. Fox, C.A. Gonzalez-Benecke, T.M. Martin, A. Noormets, D.A. Sampson, and R.O. Teskey. 2017. Leveraging 35 years of *Pinus taeda* research in the southeastern US to constrain forest carbon cycle predictions: regional data assimilation using ecosystem experiments. *Biogeosciences* 14: 3525-3547. https://doi.org/10.5194/bg-14-3525-2017

- Awarded the inaugural Ecological Forecasting Outstanding Publication Award by the Ecological Society of America.

2016

65. Niu, S., A.T. Classen, J. Dukes, P. Kardol, L. Liu, Y. Luo, L. Rustad, J. Tang, P.H. Templer, R.Q. Thomas, D. Tian, S. Vicca, Y.-P. Wang, J. Xia, and S. Zaehle. 2016. Global Patterns and Fundamental Mechanisms of the Terrestrial Nitrogen Cycle. *Ecology Letters* 19: 697-709. https://doi.org/10.1111/ele.12591
66. Hurtt, G.C., R.Q. Thomas, J. Fisk, R. Dubayah, and S. Sheldon. 2016. The impact of fine-scale disturbances on the predictability of vegetation dynamics and carbon flux. *PLOS One* 11: e0152883. https://doi.org/10.1371/journal.pone.0152883
67. Burd, A.B., S. Frey, A. Cabre, T. Ito, N.M. Levine, C. Lønborg, M. Long, M. Mauritz, R.Q. Thomas, B. Stevens, T. Vanwallenghem, and N. Zeng. 2016. Terrestrial and marine

perspectives on modeling organic matter degradation pathways and controls. *Global Change Biology* 22: 121-136. https://doi.org/10.1111/gcb.12987

68. Bracco, A.B., M.C. Long, N.M. Levine, R.Q. Thomas, C. Deutsch, and G.A. McKinley. 2016. The NCAR advanced study program summer colloquium on carbon-climate connections in the Earth system: capacity building in cross-disciplinary research. *Bulletin of the American Meteorological Society* 96, 1381–1384. https://doi.org/10.1175/BAMS-D-13-00246.1

2008 - 2015

69. Thomas, R.Q., E.N.J. Brookshire, S. Gerber. 2015. Nitrogen limitation on land: how can it occur in Earth system models? *Global Change Biology* 21: 1777–179. https://doi.org/10.1111/gcb.12813
70. Thomas, R.Q., and M. Williams. 2014. A model using marginal efficiency of investment to analyze carbon and nitrogen interactions in terrestrial ecosystems (ACONITE Version 1). *Geoscientific Model Development* 7: 2015–2037. https://doi.org/10.5194/gmd-7-2015-2014
71. Thomas, R.Q., S. Zaehle, P. H. Templer, and C.L. Goodale. 2013. Global patterns of nitrogen limitation: Confronting two global biogeochemical models with observations. *Global Change Biology 19*, 2986–2998. https://doi.org/10.1111/gcb.12281
72. Bell, R.C., A. Belmaker, C.S. Couch, K.M. Marchetto, J.L. Simonis, R.Q. Thomas, J.P. Sparks, J.M. Brown, K.S. Franscisco, and M.E. Manuel. 2013. Effectiveness of *Erythrina* gall wasp biocontrol and implications for the recovery of threatened Wiliwili trees (Fabaceae: *Erythrina sandwicensis*). *Journal of the Torrey Botanical Society* 140:215–224. https://doi.org/10.3159/TORREY-D-12-00069.1
73. Thomas, R.Q., J.R. Kellner, D.B. Clark, and D.R. Peart. 2013. Low mortality in tall tropical trees. *Ecology* 94:920–929. https://doi.org/10.1890/12-0939.1
74. Thomas, R.Q., G.B. Bonan, and C.L. Goodale. 2013. Insights into mechanisms governing forest carbon response to nitrogen deposition: a model-data comparison using observed responses to nitrogen addition. *Biogeosciences* 10: 3869–3887. https://doi.org/10.5194/bg-10-3869-2013
75. Rastetter, E.B., R.D. Yanai, R.Q. Thomas, M.A. Vadeboncoeur, T.J. Fahey, M.C. Fisk, B.L. Kwiatkowski, and S.P. Hamburg. 2013. Recovery from disturbance requires resynchronization of ecosystem nutrient cycles. *Ecological Applications* 23:621-642. https://doi.org/10.1890/12-0751.1
76. Carey, C.C., H.A. Ewing, K.L. Cottingham, K.C. Weathers, R.Q. Thomas, and J.F. Haney. 2012. Occurrence, toxicity, and potential ecological consequences of the cyanobacterium *Gloeotrichia echinulata* for low-nutrient lakes in the northeastern United States. *Aquatic Ecology* 46:395–409. https://doi.org/10.1007/s10452-012-9409-9
77. Raciti, S.M., T.J. Fahey, R.Q. Thomas, P.B. Woodbury, C.T. Driscoll, F.J. Carranti, D.R. Foster, P.S. Gwyther, B.R. Hall, S.P. Hamburg, J.C. Jenkins, C. Neill, B.W. Peery, E.E. Quigley, R. Sherman, M.A. Vadeboncoeur, D.A. Weinstein, and G. Wilson. 2012. Local scale carbon budgets and mitigation opportunities for the northeastern United States. *BioScience* 62:23-38. https://doi.org/10.1525/bio.2012.62.1.7
78. Leuzinger, S., and R.Q Thomas. 2011. How do we improve Earth system models? Integrating Earth system models, ecosystem models, experiments and long-term data. *New Phytologist* 191:15–18. https://doi.org/10.1111/j.1469-8137.2011.03778.x

79. Thomas, R.Q., C.D. Canham, K.C. Weathers, and C.L. Goodale. 2010. Increased tree carbon storage in response to nitrogen deposition in the U.S. *Nature Geosciences* 3:13-17. https://doi.org/10.1038/ngeo721
    - Web of Science Highly Cited Paper: top 1% in Geoscience
80. Hurtt, G.C., J. Fisk, R.Q. Thomas, R. Dubayah, P. Moorcroft, and H. Shugart. 2010. Linking models and data on vegetation structure: data requirements and a modeling framework for future space-borne missions. *Journal of Geophysical Research* 115: G00E10. https://doi.org/10.1029/2009JG000937
81. Canham, C.D. and R.Q. Thomas. 2010. Local frequency but not relative abundance of temperate tree species varies along climate gradients in eastern North America. *Ecology*. 91:3433–3440. https://doi.org/10.1890/10-0312.1
82. Thomas, R.Q., G.C. Hurtt, R. Dubayah, and M. Schilz. 2008. Using lidar data and a height structured ecosystem model to improve estimates forest carbon stocks and fluxes over mountainous terrain. *Canadian Journal of Remote Sensing* 34: S351-S363. https://doi.org/10.5589/m08-036
83. Fisher, J., G.C. Hurtt, R.Q. Thomas, and J.Q. Chambers. 2008. Clustered disturbances lead to bias in large-scale estimates based on forest sample plots. *Ecology Letters* 11: 554-563. https://doi.org/10.1111/j.1461-0248.2008.01169.x

In review or revision

1. Olsson, F., Thomas, R. Q., Hipsey, M. R., Delany, A. D., Sims, C., Rumbelow, A., & Carey, C. Developing scenario-based, near-term iterative forecasts to inform water management. *ESS Open Archive*. https://doi.org/10.22541/essoar.175105660.07388971/v1
2. Lofton, M.E., R.Q. Thomas, F. Olsson, A. Breef-Pilz, C. C. Carey, A. Neog, S. Fatemi, A. Karpatne, D. Howard, and H. Wander. The importance of a multi-model ensemble for predicting variable ecological time series across dynamic conditions. *ESS Open Archive*. http://dx.doi.org/10.22541/essoar.174785900.05100209/v1
3. Record, N.R., C.C. Carey, J. Evanilla, O. Johnson, M. Lofton, K. Oliveira, F. Olsson, C. Ross, R.Q. Thomas, B. Tupper, and N. Hellessey. So you want to forecast: navigating multiple pathways to lower the barriers into ecological forecasting. In Review at *Earth Stewardship.*
4. Patil, P.V., R.B. Gramacy, C.C. Carey, and R.Q. Thomas. Vecchia approximated Bayesian heteroskedastic Gaussian processes. *arXiv*. https://doi.org/10.48550/arXiv.2507.07815
5. Parker,W., C.C. Carey, F. Olsson, R.Q. Thomas. An adequacy-for-purpose perspective for ecology. In Revision at *Frontiers in Ecology and the Environment*.
6. Thomas, R.Q. and C. Boettiger. Cyberinfrastructure to support ecological forecasting challenges. *ESS Open Archive*. http://doi.org/10.22541/essoar.175917344.44115142/v1
7. Shukla, R., A. Breef-Pilz, M.E. Lofton, C.C. Carey, and R.Q. Thomas. Harnessing Stability-Guided Interpretable Machine Learning for Understanding and Predicting Water Quality in Freshwater Ecosystems. *ESS Open Archive*. http://doi.org/10.22541/essoar.176245803.30250671/v1
8. Ramrakhiani, A.T., N. Cutler, C.C. Carey, A.D. Delany, I. Lerman, R.Q. Thomas, O. Wickman, and R.J. Figueiredo. EphFlow: Addressing resource limitations of cross-platform FaaS workflows via serverless Ephemeral VM Provisioning. In review at *IEEE CCGrid 2026*.

5. SOFTWARE

5.1 R CRAN Packages

1. R. Q. Thomas. 2024. ropenmeteo: Wrappers for 'Open-Meteo' API. R Package version 0.1. https://doi.org/10.32614/CRAN.package.ropenmeteo
2. Figueiredo, R., S. Park, M. Nan, V. Daneshmand, R.Q. Thomas, & C.C. Carey. 2024. FaaSr: FaaS (Function as a Service). R package version 1.3.0. https://doi.org/10.32614/CRAN.package.FaaSr
3. Boettiger, C., R.Q. Thomas, C. Laney, C. Lunch. 2024. neonstore: NEON Data Store. R package version 0.5.1. https://doi.org/10.32614/CRAN.package.neonstore

5.2 Other software

1. Boettiger, C., R.Q. Thomas, M. Dietze, A. Shiklomanov. 2020. EFIstandards: EFI ecological forecasting output and metadata standards. https://github.com/eco4cast/EFIstandards
2. Thomas, R.Q. 2020. noaaGEFSpoint: Downloads And Temporally Downscales NOAA GEFS 6-hr Forecasts for a Point Location. https://github.com/rqthomas/noaaGEFSpoint
3. Thomas, R.Q., R.J. Figueiredo, V. Daneshmand, L.K. Puckett, C. C. Carey. 2020. Forecasting Lakes and Reservoir Ecosystems (FLARE) V1. Zenodo. https://doi.org/10.5281/zenodo.3862905
4. Daneshmand, V., R.Q. Thomas, B.J. Bookout, C.C. Carey and R.J. Figueiredo. 2020. Sensor Gateway code for Forecasting Lake and Reservoir Ecosystems (FLARE). Zenodo. https://doi.org/10.5281/zenodo.3862907
5. Thomas, R.Q., M. Williams, M.A. Cavaleri, J.-F. Exbrayat, T.L. Smallman, and L.E. Street. 2019. ACONITE_canopy: ACONITE Canopy Model and analysis code. Zenodo. https://doi.org/ 10.5281/zenodo.3530843
6. Lawrence, D.M., et al. [52 authors including R.Q. Thomas]. 2019. Community Land Model Version 5. https://github.com/ESCOMP/ctsm
7. Thomas, R.Q. 2018. DAPPER (Data Assimilation for Predicting Productivity in Ecosystem and Regions). https://github.com/EcoDynForecast/DAPPER
8. Thomas, R.Q. and M. Williams. 2014. ACONITE: Analysis of Carbon and Nitrogen Interactions in Terrestrial Ecosystems. https://github.com/rqthomas/ACONITE

6. BOOK CHAPTERS

1. Pace, M.L., G.M. Lovett, C.C. Carey, and R.Q. Thomas. 2021. Primary production: the foundation of ecosystems. In K.C. Weathers, D.L. Strayer, and G.E. Likens (editors). *Fundamentals of Ecosystems Science*, 2e. Academic Press.
2. Daw, A., R.Q. Thomas, C.C. Carey, J.S. Read, A.P. Appling, and A. Karpatne. 2022. Physics-Guided Architecture (PGA) of LSTM Models for Uncertainty Quantification in Lake Temperature Modeling. In A. Karpatne, R. Kannan, V. Kumar (editors). *Knowledge Guided Machine Learning,* 1e, Chapman and Hall/CRC.

7. OTHER PUBLICATIONS

1. Thomas, R.Q., G.A. McKinley, M. C. Long. 2013. Examining Uncertainties in Representations of the Carbon Cycle in Earth System Models. *EOS, Transactions American Geophysical Union* 94: 460. https://doi.org/10.1002/2013EO480006
2. Thomas, R. Q., C. C. Carey, E. R. Sokol, M. A. Kenney, M. C. Dietze, and M. A. Xenopoulos. 2025. Advances in ecological forecasting. *Eos*: 106. https://doi.org/10.1029/2025EO255024

8. DATASETS

1. Zimmerman et al. (116 authors, including R. Q. Thomas). 2025. PhenoCam Dataset v3.0: Digital Camera Imagery from the PhenoCamNetwork, 2000-2023. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/2364.
2. Carey, C.C., A. Breef-Pilz, V. Daneshmand, A.D. Delany, and R.Q. Thomas. 2024. Time series of high-frequency sensor data measuring water temperature, dissolved oxygen, pressure, conductivity, specific conductance, total dissolved solids, chlorophyll a, phycocyanin, fluorescent dissolved organic matter, and turbidity at discrete depths in Falling Creek Reservoir, Virginia, USA in 2018-2023 ver 8. Environmental Data Initiative. https://doi.org/10.6073/pasta/7541e8d297850be7c613d116156735a9
3. Lofton, M.E., D.W. Howard, R.Q. Thomas, and C. C Carey (2023). State-of-the-art review of near-term freshwater forecasting literature published between 2017 and 2022. doi:10.6073/pasta/949164a64de132ff3bbb7b92d2e1c729
4. Woelmer, W., Thomas, R. Q., Moore, T., & Carey, C. (2023). Macrosystems EDDIE module 8: Using ecological forecasts to guide decision-making (instructor materials). doi:10.6073/pasta/8bf4a076433f0e9f74f1d764d5bd4c3f
5. Moore, T., Lofton, M., Carey, C., & Thomas, R. Q. (2023). Macrosystems EDDIE Module 6: Understanding Uncertainty in Ecological Forecasts (Instructor Materials). doi:10.6073/pasta/8bf4a076433f0e9f74f1d764d5bd4c3f
6. Hipsey, M.R., C. Boon, L.C. Bruce, R.Q. Thomas, M. Weber, L. Winslow, J.S. Read and D.P. Hamilton. 2022. AquaticEcoDynamics/glm-aed: v3.3.0 (v3.3.0). Zenodo. https://doi.org/10.5281/zenodo.7047527
7. Moore, T.N., C.C. Carey, and R.Q. Thomas. 2022. Macrosystems EDDIE Module 5: Introduction to Ecological Forecasting (Instructor Materials) ver 3. Environmental Data Initiative. https://doi.org/10.6073/pasta/1da866a2eb79be84195e785a4370010c
8. Woelmer, W.M., R.Q. Thomas, T.N. Moore, and C.C. Carey. 2022. Macrosystems EDDIE Module 8: Using Ecological Forecasts to Guide Decision-Making (Instructor Materials) ver 3. Environmental Data Initiative. https://doi.org/10.6073/pasta/ad8adb1329f2a75bdd522fd22f2cb201
9. Woelmer, W.M., T.N. Moore, R.Q. Thomas & C.C. Carey (2022). Macrosystems EDDIE Module 8: Using Ecological Forecasts to Guide Decision-Making (R Shiny application) (v1.1). Zenodo. https://doi.org/10.5281/zenodo.7074674
10. Thomas, V.A., R.H. Wynne, J. Kauffman, W. McCurdy, E.B. Brooks, R.Q. Thomas and J. Rakestraw. 2022 Virginia Pine Harvest Activity Classification, 2014-2017. University Libraries, Virginia Tech. Dataset. https://doi.org/10.7294/19938236.v1
11. Moore, T.N., C.C. Carey & R.Q. Thomas (2022). Macrosystems EDDIE Module 5: Introduction to Ecological Forecasting (R Shiny application) (v1.3). Zenodo. https://doi.org/10.5281/zenodo.6587161

12. Thomas, R.Q., R.P. McClure, T.N. Moore, W.M. Woelmer, C. Boettiger, R.J. Figueiredo, R.T. Hensley, & C.C. Carey (2022). Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S.: code (v1.1). Zenodo. https://doi.org/10.5281/zenodo.6674487
13. Thomas, R.Q., R.P. McClure, T.N. Moore,W.M. Woelmer, C. Boettiger, R.J. Figueiredo, R.T. Hensley & C.C. Carey (2022). Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S.: data, forecasts, and scores. https://doi.org/10.5281/zenodo.6643596
14. Carey, C.C., A.G. Hounshell, B.M. D'Acunha, A. Breef-Pilz, R.Q. Thomas, and M.S. Johnson. 2022. Time series of carbon dioxide and methane fluxes measured with eddy covariance for Falling Creek Reservoir in southwestern Virginia, USA during 2020-2022 ver 1. Environmental Data Initiative. https://doi.org/10.6073/pasta/a1324bcf3e1415268996ba867c636489.
15. Lofton, M., D, Howard, R.Q. Thomas and C.C. Carey. (2022). Code repository: Progress and opportunities in advancing near-term forecasting of freshwater quality (v1.1). Zenodo. https://doi.org/10.5281/zenodo.7083846
16. Carey C.C, R.Q. Thomas, R.P. McClure, A.G. Hounshell, W.M. Woelmer, H.L. Wander and A.S.L. Lewis. (2022). CareyLabVT/FCR-GLM: FCR GLM-AED model, data, and code for the paper "Anoxia decreases the magnitude of the carbon, nitrogen, and phosphorus sink in freshwaters" in Global Change Biology by Carey et al., v1.2. In Global Change Biology (v1.2). Zenodo. https://doi.org/10.5281/zenodo.6520742
17. Thomas, R.Q., et al. 2021. Ecological Forecasting Initiative: NEON Ecological Forecasting Challenge documentation V1.0 (v1.0). Zenodo. https://doi.org/10.5281/zenodo.4780155
18. Lewis, A.S., W.M. Woelmer, H.L. Wander, D.W. Howard, J.W. Smith, R.P. McClure, M.E. Lofton, N.W. Hammond, R.S. Corrigan, R.Q. Thomas, and C.C. Carey. 2021. Systematic review of near-term ecological forecasting literature published between 1932 and 2020 ver 1. Environmental Data Initiative. https://doi.org/10.6073/pasta/c4bea94f100f39a6b73c7b9a577df214.
19. McClure, R.P., R.Q. Thomas, M. Lofton, W. Woelmer, and C.C. Carey. (2021). ryanmclake/CH4castR: CH4castR (v1.1.2). Zenodo. https://doi.org/10.5281/zenodo.5590634
20. Thomas, R.Q., R.J. Figueiredo, V. Daneshmand, L.K. Puckett, C. C. Carey. 2020. Forecasting Lakes and Reservoir Ecosystems (FLARE). Zenodo. https://doi.org/10.5281/zenodo.3862905
21. Daneshmand, V., R.Q. Thomas, B.J. Bookout, C.C. Carey and R.J. Figueiredo. 2020. Sensor Gateway code for Forecasting Lake and Reservoir Ecosystems (FLARE). Zenodo. https://doi.org/10.5281/zenodo.3862907
22. Boettiger, C., R.Q. Thomas, C. Laney, C. Lunch. 2020. neonstore: NEON Data Store. R package version 0.3.1. https://cran.r-project.org/web/packages/neonstore/index.html
23. Seyednasrollah, B. et al. [115 authors including R.Q. Thomas]. 2019. PhenoCam Dataset v2.0: Vegetation Phenology from Digital Camera Imagery, 2000-2018. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/1674
24. Thomas, R.Q., M. Williams, M.A. Cavaleri, J.-F. Exbrayat, T.L. Smallman, and L.E. Street. 2019. ACONITE_canopy: ACONITE Canopy Model and analysis code. Zenodo. https://doi.org/ 10.5281/zenodo.3530843
25. Horn, K.J., R.Q. Thomas, C.M. Clark, L.H. Pardo, M.E. Fenn, and G.B. Lawrence. 2018. Growth and survival relationships of 71 tree species with nitrogen and sulfur deposition across

the conterminous U.S.: Data and R code. University Libraries, Virginia Tech. Dataset. https://doi.org/10.7294/khxs-x749

9. COMPETITIVE GRANTS

Total: $12,555,693
Total to Virginia Tech: $12,212,765
Total to R.Q. Thomas: $6,271,464

9.1 Active

1. Thomas, R.Q., C.C. Carey, M. Schriber, R. Calder. 2025-2029. Building resilience to Earth system hazards: forecasting drinking water quality with real-time integrated catchment modeling. National Science Foundation $1,000,000.
2. Carey, C.C. and R.Q. Thomas. 2025-2026. Applying the FLARE forecasting system to the Upper Yarra Reservoir. Melbourne Water. $50,613.00.
3. Thomas, R.Q. and C.C. Carey. 2023-2026. Collaborative Research: Elements: FaaSr: Enabling Cloud-native Event-driven Function-as-a-Service Computing Workflows in R. National Science Foundation. $85,000.00.
4. Thomas, R.Q. 2023-2024. Modeling plant responses to air pollution and climate change. National Parks Service. $116,885.00
5. Carey, C. C. and R. Q. Thomas. 2023-2025. Global Centers Track 2: Building the Global Center for Forecasting Freshwater Futures. National Science Foundation. $ 250,000.00
6. Carey, C.C. M. Schriber, R. Q. Thomas. 2023-2028. LTREB: Integrating real-time open data pipelines and forecasting to quantify ecosystem predictability at day to decadal scales. National Science Foundation. $ 450,000.00
7. Carey, C.C. R. Gramacy, M. Schriber, R. Calder, R. Q. Thomas. 2023-2027. Collaborative Research: URoL:ASC: Applying rules of life to forecast emergent behavior of phytoplankton and advance water quality management. National Science Foundation. $2,076,344
8. Thomas, R.Q. 2022-2026. Frameworks: Collaborative Research: DeCODER (Democratized Cyberinfrastructure for Open Discovery to Enable Research). National Science Foundation (collaborative grant). $535,004

9.2 Completed

9. Thomas, R.Q., M. Dietze, M.A. Kenny, C. Laney, J.S. McLachlan. 2020-2025. NEON RCN: The Ecological Forecasting Initiative RCN: Using NEON-enabled near-term forecasting to synthesize our understanding of predictability across ecological systems and scales. National Science Foundation Macrosystems Biology. $500,000
10. C.C. Carey and Thomas, R.Q. 2020 – 2024. Collaborative Research: CIBR: Cyberinfrastructure enabling end-to-end workflows for aquatic ecosystem forecasting, National Science Foundation Division of Biological Infrastructure. $658,391
11. C.C. Carey and Thomas, R.Q. 2020-2024. MSA: Macrosystems EDDIE: An undergraduate training program in macrosystems science and ecological forecasting. National Science Foundation Macrosystems Biology. $300,000
12. Carey, C.C., Thomas, R.Q. M. Sorice, M. Schreiber, R.J. Figueiredo) 2018-2021. S&CC-IRG Track 2: Resilient water systems: Integrating environmental sensor networks and real-time water quality forecasts securely to adaptively manage drinking water and build social trust. National Science Foundation Smart & Connected Communities. $1,000,000

13. Thomas, R.Q., G. Bonan, J. Dukes, C. Goodale, S. Grady, S. Frey, J. Sparks. 2015-2021. Decadal prediction of sustainable agricultural and forest management - Earth system prediction differs from climate prediction. USDA-NIFA Earth System Modeling. $2,569,544
14. V.A. Thomas, R.Q. Thomas, R.H. Wynne, D. Wear, L. Chini, B. Mei. 2017-2021. Regionally specific drivers of land-use transitions and future scenarios: A synthesis considering the land management Influence in the southeastern US. NASA Land-use Land-cover Change. $613,508
15. Thomas, R.Q. 2014-2016. Forecasting forest response to N deposition: integrating data from individual plant responses to soil chemistry with a continental scale gradient analysis. US Geological Survey. $100,000
16. Thomas, R.Q. and K.J. Horn. 2016. Applying species-specific information on tree responses to nitrogen deposition to develop critical loads for national parks in the U.S. National Parks Service Air Resources Division. $78,189
17. Thomas, R.Q., J. Coulston, P. Ratke. 2016-2018. Past, current, and future CO_2 and N fertilization impacts on forest carbon sequestration. U.S. Forest Service. $60,000
18. Thomas, R.Q. and K.J. Horn. 2016. Advancing critical load estimates nationally. Environmental Protection Agency (Via Research Triangle Institute). $18,000

10. HONORS AND AWARDS

1. Frontier Award, Office of Research and Innovation, Virginia Tech University-level award that recognizes exceptional scholarly achievement for mid-career faculty, as well as their potential to build on established research to advance knowledge and innovation. 2025.
2. Ecological Forecasting Outstanding Publication Award by the Ecological Society of America. 2025.
3. Cathie and Tom Woteki Data Science Faculty Fellow, College of Science, Virginia Tech, 2021
4. Web of Science Highly Cited Paper (top 1% in Geosciences) for Thomas et al. 2010. 2020
5. Inaugural Ecological Forecasting Outstanding Publication Award by the Ecological Society of America. 2018
6. LaMont C. Cole Award in recognition of the most outstanding paper published by a graduate student in the Department of Ecology and Evolutionary Biology at Cornell University. 2011
7. Rufus Choate Scholar (top 5% of class), Dartmouth College. 2005
8. Willard W. Eggleston Memorial Botany Prize, Dartmouth College, 2005

11. ADVISING/MENTORING

11.1 Post-doctoral Research Associates

1. Molly Stroud (2025 – present)
2. Rohit Shukla (2025 – present)
3. Mary Lofton (2022 – 2025)
4. Maike Holthuijzen (2022 – 2023)
5. Freya Olsson (2022 – 2025)
6. Tadhg Moore (2020 - 2022)
7. Kevin Horn (2014 - 2017)
8. Ryan McClure (2021)

11.2 Ph.D. Students

1. Bibek Kendel (2024 -)
2. Joshua Rady (degree conferred 2022; currently post-doc at Woodwell Climate Research Center)
3. John Smith (degree conferred 2022; co-advised with Leah Johnson in the Department of Statistics; currently assistant professor at Montana State University)
4. Benjamin Ahlswede (degree conferred 2021; currently Assistant Research Professor at Penn State University)
5. Michael Graham (degree conferred 2019; co-advised with Megan O'Rourke in the School of Plant and Environmental Sciences; currently climate scientist at Rodale Institute)

11.3 Master of Science

1. Wyatt McCurdy (degree conferred 2019; currently a Ph.D. student at University of Southern Maine)
2. Annika Jerslid (degree conferred 2016; earned Ph.D. from Georgia Tech; currently Assistant Research Scientist at University of Maryland College Park/NASA)
3. Benjamin Ahlswede (degree conferred 2015; continued as a Ph.D. student with me)

11.4 Undergraduate Research

1. Laura Puckett (degree conferred in 2019)
2. Greg Harrison (degree conferred in 2023)

11.5 Graduate Committees

1. Edward Russell (Ph.D.)
2. Dexter Howard (Ph.D.)
3. Cameron Houser (Ph.D.)
4. Elizabeth Weaver (Ph.D.)
5. Whitney Woelmer (Ph.D.)
6. Nicholas Hammond (M.S.)
7. Abby Lewis (Ph.D.)
8. Heather Wander (Ph.D.)
9. Jinshi Jian (Ph.D.)
10. Risa McNellis (M.S., Texas Tech)
11. Jeremy Forsythe (Ph.D., Clemson)
12. Katie Hoffman (Ph.D.)
13. Dom Edwards (Ph.D.)
14. Aaron Price (M.S.)

12. COURSES TAUGHT

12.1 Virginia Tech

1. Spring 2026: FREC 5174: Ecological Modeling and Forecasting
2. Spring 2026: FREC 3044: Environmental Data Science
3. Spring 2025: BIOL/FREC 5034: Ecosystem Dynamics
4. Spring 2025: FREC 3044: Environmental Data Science

5. Spring 2024: FREC 5174: Ecological Modeling and Forecasting
6. Spring 2024: FREC 3044: Environmental Data Science
7. Spring 2023: BIOL/FREC 5034: Ecosystem Dynamics
8. Spring 2023: FREC 3044: Environmental Data Science
9. Spring 2021: FREC 3044: Environmental Data Science
10. Spring 2021: FREC 5884: Ecological Forecasting
11. Spring 2020: FREC 3044: Environmental Data Science
12. Spring 2020: FREC 5884: Ecological Forecasting
13. Spring 2019: FREC 3044: Environmental Data Science
14. Spring 2018: FREC 5004: Graduate Seminar
15. Spring 2018: FREC 3604: Climate Science
16. Fall 2019: FREC 5034: Ecosystem Dynamics
17. Fall 2018: FREC 5884: Ecological Forecasting
18. Fall 2018: FREC 5204: Ecosystem and Climate
19. Spring 2017: FREC 3604: Climate Science
20. Spring 2017: FREC 5004: Graduate Seminar
21. Spring 2017: GRAD 5134: Interdisciplinary Research in Remote Sensing
22. Spring 2017: FREC 3344: Field Exp. Forest Resources (Contributing instructor)
23. Fall 2017: FREC 5034: Ecosystem Dynamics
24. Spring 2016: FREC 3604: Climate Science
25. Spring 2016: FREC 5204: Ecosystem and Climate
26. Spring 2016: FREC 3344: Field Exp. Forest Resources (Contributing instructor)
27. Spring 2016: FREC 5004: Graduate Seminar
28. Spring 2015: FREC 3604: Climate Science
29. Spring 2015: FREC 3344: Field Exp. Forest Resources (Contributing instructor)
30. Spring 2014: FREC 5204: Ecosystem and Climate
31. Spring 2014: FREC 3344: Field Exp. Forest Resources (Contributing instructor)

12.2 Summer graduate training courses

1. Near-term Iterative Forecasting Summer Training Course, Boston University (virtual format), 2020
2. Invited Instructor, Mechanisms and Interactions of Climate Change in Mountain Regions (MICMoR), 'Examining Mountain Ecosystems in Regional to Global Environments of Carbon-cycling and Climate (EMERGE-CC)' at the Institute of Meteorology and Climate Research KIT/IMK-IFU, Garmisch-Partenkirchen, Germany, 2014
3. National Center for Atmospheric Research Advanced Studies Program Colloquium on Carbon – Climate Interactions, Boulder, Colorado, 2013

13. PROFESSIONAL SERVICE AND DEVELOPMENT

13.1 External Service and Editorships

1. Lead, American Geophysical Union cross-journal Special Collection on "Ecological Forecasting in the Earth System". 2024 – present
2. Lead, Ecological Forecasting Initiative Research Coordination Network (EFI-RCN). 2019 – present
3. Steering Committee, Ecological Forecasting Initiative. 2018 – present

4. Member, National Ecological Observatory Network (NEON) Technical Working Group on Ecological Forecasting. 2019 – present
5. Member, American Meteorological Society Committee on Ecological Forecasting. 2019 – 2023
6. Committee Member, Ecological Society of America Ecological Forecasting Award committee. 2018
7. Founding Board, Ecological Forecasting Initiative. 2018 – 2020
8. Associate Editor, *Journal of Geophysical Research – Biogeosciences.* 2019 – present
9. Associate Editor*, Frontiers in Forests and Global Change.* 2018 – present
10. Co-organizer, National Center for Atmospheric Research Advanced Studies Program Colloquium on Carbon – Climate Interactions. 2012 – 2013

13.2 Service at Virginia Tech

1. Co-director, Virginia Tech Center for Ecosystem Forecasting. 2024 – present
2. Search Committee member, Global Change Ecology, Department of Forest Resources and Environmental Conservation. 2024 – 2025
3. Graduate Affairs Committee, Department of Forest Resources and Environmental Conservation. 2024 – present.
4. College of Natural Resources and Environment representative on the Commission on Research. 2022 – present
5. Proposal reviewer, COVID-19 Rapid Response Seed Fund. 2020
6. Member of Interfaces of Global Change Interdisciplinary Graduate Education Program. 2013 – present
7. Member of Remote Sensing Interdisciplinary Graduate Education Program. 2013 – 2017
8. Environmental Informatics Collegiate Faculty search committee. 2019
9. Member, University Faculty Senate Research Assessment Committee. 2018- 2019
10. Chair, College of Natural Resources elections committee. 2016 – 2019
11. Faculty adviser, Graduate student-lead department seminar series. 2016 – 2018
12. Forest Ecology faculty search committee. 2016 – 2017
13. Chair of department Graduate Affairs Committee. 2016 – 2017
14. Ecohydrologic Modeling and Informatics Search Committee. 2014
15. Department Seminar Series coordinator. 2013

13.2 Grant Reviews

1. National Science Foundation (NSF), Division of Biological Sciences, Ecosystem Science, Ad-Hoc Reviewer, 2016, 2024, 2025
2. Virginia Agricultural Experiment Station, Hatch project review, 2016
3. National Science Foundation (NSF), Division of Behavioral and Cognitive Sciences, Geography and Spatial Sciences, 2014
4. Virginia Agricultural Experiment Station, McIntire-Stennis Project Review, 2014
5. National Science Foundation (NSF), Division of Environmental Biology (DEB), Ecosystem Science Program, Ad-Hoc Reviewer, 2013

13.4 Professional meetings, panels, workshops, led and/or organized

1. Create and automate real-time water quality forecasts. Workshop. Ecological Forecasting Initiative Conference. Blacksburg, VA, May 19, 2025.

2. Evaluation, scoring, and synthesis of ecological forecasts using the NEON Forecasting Challenge Catalogue. Workshop. Ecological Forecasting Initiative Conference. Blacksburg, VA, May 19, 2025.
3. Co-Organizer, Organized Oral Session, Ecological Forecasting for Research and Decision Making, Ecological Session of America, Baltimore, MD, August 10-15, 2025.
4. Ecological Forecasting Initiative Annual Meeting, Blacksburg, VA, May 19-22, 2025
5. Advancing near-term forecasts of Lake Alexandrina water quality to support management. Adelaide, South Australia. November 10-16, 2024.
6. Can you predict the future? Introducing the NEON Ecological Forecasting Challenge. Ecological Forecasting Initiative 2024 Meeting. Helsinki, Finland. June 11 – 13, 2024.
7. Moving complex forecasts into the cloud. Ecological Forecasting Initiative 2024 Meeting. Helsinki, Finland. June 11 – 13, 2024.
8. Ecological Society of America workshop, Can Your Predict the Future? Introducing the NEON Ecological Forecasting Challenge. In Ecological Society of America Annual Meeting. Portland, OR. 2023
9. Ecological Society of America workshop, Teach Quantitative Reasoning and Ecological Forecasting to Undergraduates with Project EDDIE and Macrosystems EDDIE Modules. In Ecological Society of America Annual Meeting. Portland, OR. 2023
10. Data Skills Webinar: Ecological Forecasting. Olsson, F., & Thomas, R. Q. (2023). In NEON Data Skills Webinar.
11. Lead organizer, Ecological Forecasting Initiative Unconference 2023
12. Lead organizer, Ecological Forecasting Initiative All-hands Meeting 2022
13. Lead organizer, Ecological Forecasting Initiative Research Coordination Network workshop *Coordinating the NEON-enabled forecasting challenge,* 2020.
14. Symposium lead convener, Ecological Society of America, *The Ecological Forecasting Initiative: Lessons Learned from a Grassroots Network to Advance Ecology,* 2020
15. Session Co-convener, American Geophysical Union Fall Meeting, *Ecological Forecasting in the Earth System, 2019*
16. Session lead convener, American Geophysical Union Fall Meeting, *Land Management in the Earth system: Measurements and Models, 2018*
17. Session Co-convener, American Geophysical Union Fall Meeting, *Ecological Forecasting in the Earth System, 2018*
18. Session Co-convener, American Geophysical Union Fall Meeting, *Land-use and Biogeochemical Processes, 2016*
19. Co-organizer, Integrated Network for Terrestrial Ecosystem Research on Feedbacks to the Atmosphere and ClimatE (INTERFACE) Research Coordination Network Meeting, St Petersburg Beach, FL, 2016
20. Co-organizer, USGS Powell Center workshop on "Forecasting forest response to N deposition: Integrating data from individual plant responses to soil chemistry with a continental-scale gradient analysis". 2nd meeting, 2015
21. Co-organizer, USGS Powell Center workshop on "Forecasting forest response to N deposition: Integrating data from individual plant responses to soil chemistry with a continental-scale gradient analysis". 1st meeting, 2014
22. Co-Organizer, International Workshop titled "Key Uncertainties in the Global Carbon-Cycle: Perspectives Across Terrestrial and Ocean Ecosystems", National Center for Atmospheric Research, Boulder, CO, 2013

23. Co-organizer, National Center for Atmospheric Research Advanced Studies Program Colloquium on Carbon – Climate Interactions

14. INVITED SEMINARS AND PRESENTATIONS

2025

1. Thomas, R.Q. and C.C. Carey. Forecasting future water quality to enhance drinking water security. The Times Higher Education Innovation & Impact Summit. Alexandria, VA. November 19, 2025.
2. Carey, C.C., F.E. Olsson, and Thomas, R.Q. (2025). Applying the FLARE forecasting system to Lake Alexandrina. Invited oral presentation, South Australian Department for Environment and Water, Adelaide, Australia, June 2025 [virtual]
3. Carey, C.C., A. Breef-Pilz, Austin D. Delany, F.E. Olsson, and R.Q. Thomas. Integrating high-frequency monitoring and forecasting to quantify the predictability of reservoirs. Invited oral presentation, Association for the Sciences of Limnology and Oceanography (ASLO) Conference, Charlotte, North Carolina, March 2025
4. Carey, C.C., and Thomas, R.Q. (2025). The Forecasting Lake And Reservoir Ecosystems (FLARE) system. Invited oral presentation, Melbourne Water, Melbourne, Australia, March 2025 [virtual]
5. Thomas, R.Q. Ecological forecasting to anticipate the future of forests and freshwaters. Virginia Master Naturalist Webinar Series. Virtual. February 24, 2025.
6. Thomas, R.Q. Forecasting the Future of Diverse Ecosystems with Long-Term Network Observations. American Association for the Advancement of Science Annual Meeting. Boston, MA. February 13-15, 2025
7. Carey, C.C. and Thomas, R.Q. Harnessing LSPA's Water Quality Buoy Data for Understanding the Past and Forecasting the Future. Lake Sunapee Protective Association Center for Lake Studies. Sunapee, NH, January 3, 2025

2024

8. Thomas, R.Q. Near-term Iterative Ecosystem Forecasting to Understand and Manage Our Environment. Virginia Tech College of Science Roundtable Board Meeting. Blacksburg, VA, November 2, 2024.
9. Thomas, R.Q. Near-term Iterative Ecosystem Forecasting to Understand and Manage Water Quality. Seale Coastal Zone Observatory Symposium and Workshop. Blacksburg, VA, September 26, 2024.
10. Thomas, R.Q. The Virginia Tech Center for Ecosystem Forecasting. Academy of Data Science, Virginia Tech, Blacksburg, VA. April 16, 2024.
11. Thomas, R.Q. and C. Boettiger. Adventures from a million forecast march: community driven-CI for ecological forecasting. Ecological Forecasting Initiative Cyberinfrastructure Workshop. Portsmouth, NH. April 10-12, 2024

2023

12. Thomas, R.Q. The NEON Ecological Forecasting Challenge. Gordon Conference in Predictive Ecology. Easton, MA. June 2023.

13. Thomas, R. Q. Democratized automated iterative ecological forecasting. In Hacking Limnology 2023: DSOS/AEMON-J Virtual Workshop and Summit 2023. Virtual. 07-24-2023
14. Thomas, R. Q., & Strahm, B. (2023). Forest Carbon Cycle. In Virginia Department of Forestry Academy. Amherst, VA.
15. Thomas, R. Q., Olsson, F., & Wheeler, K. (2023). The NEON Ecological Forecasting Challenge. In NEON Science Seminar Series. Virtual.
16. Thomas, R.Q. Ecological forecasting to anticipate the future of forests and freshwaters. Virginia Tech EEB Seminar Series. Blacksburg, VA. August 2023.

2022

17. Thomas, R.Q. The NEON Ecological Forecasting Challenge. Terrestrial Ecosystem Research Network. University of Queensland. Brisbane, Australia. May 2022.
18. Thomas, R.Q. Ecological forecasting to anticipate the future of forests and freshwaters. School of Agriculture and Environment Seminar Series. University of Western Australia. Perth, Australia. May 2022.

2021

19. Thomas, R.Q. Ecological forecasting: data-model fusion to anticipate the future of forests and freshwaters. Ecology, Evolution, Environment & Society Seminar Series. Dartmouth College. Hanover, NH. October 2021.
20. Thomas, R.Q. The NEON Ecological Forecasting Challenge. NCAR-NEON Workshop. November 2021. [virtual]
21. Thomas, R.Q. Using forecasting challenges to advance the field of ecological forecasting. American Fisheries Society Annual Meeting. Baltimore, MD. November 2021. [virtual]
22. Thomas, R.Q. Ecological forecasting: data-model fusion to anticipate the future of forests and freshwaters. U.S. Environmental Protection Agency Office of Research and Development. October 2021 [virtual]
23. Thomas, R.Q. Galvanizing the field of ecological forecasting using the NEON Ecological
24. Forecasting Challenge. Ecological Society of America Annual Meeting. August 2021 [virtual]
25. Thomas, R.Q. Ecological forecasting to anticipate ecological responses to environmental stressors. National Academy of Science Committee on Anticipatory Research for EPA. National Academy of Sciences. Washington, D.C. July 2021 [virtual]
26. Thomas, R.Q. The NEON Ecological Forecasting Challenge: Using forecasting challenges to leverage observational networks and advance prediction in ecology. Terrestrial Ecosystem Research Network Science Symposium. Australia. July 2021. [virtual]
27. Thomas, R.Q. Ecological forecasting: data-model fusion to anticipate the future of forests and freshwaters. University of Virginia, Charlottesville, Virginia, May 2021 [virtual due to COVID]

2020

28. Thomas, R.Q, C.C. Carey, R.S. Corrigan, M.E. Lofton, R. McClure, W.M. Woelmer. Near-term, iterative forecasts of freshwater ecosystem dynamics enable a novel strategy for managing reservoir drinking water quality. Ecological Society of America Annual Meeting, Salt Lake City, Utah, August 2020. [virtual due to COVID]

29. Thomas, R.Q. Integrating public environmental datasets into a seminar long undergraduate course in Environmental Informatics. Ecological Society of America Annual Meeting, Salt Lake City, Utah, August 2020. [virtual due to COVID]
30. Thomas, R.Q. Ecological Forecasting: A case study using the Forecasting Lakes and Reservoir Ecosystems (FLARE) system. New Advances in Land Carbon Cycle Modeling Summer 2020 Course, July 2020. [virtual due to COVID]
31. Thomas, R.Q. Lessons learned from integrating EDDIE modules into a semester-long undergraduate Environmental Data Science course, Project EDDIE Webinar Series as part of the National Association for Geoscience Teachers (NAGT), virtual, April 2020.
32. Thomas, R.Q. Ecological Forecasting: anticipating the future of forests and freshwaters, Department of Statistics, Virginia Tech, Blacksburg, Virginia, March 2020.
33. Thomas, R.Q. Ecological Forecasting: anticipating the future of forests and freshwaters, Department of Geosciences, Virginia Tech, Blacksburg, Virginia, February 2020.

2019

34. Thomas, R.Q. Ecological Forecasting: anticipating the future of forests and freshwaters, Auburn University, Auburn, Alabama, November 2019.
35. Thomas, R.Q. From sensors to society: A road-map for ecological forecasting based on SmartReservoir.org. NCAR-NEON Workshop on Ecological Forecasting, Boulder, Colorado, April 2019.

2018

36. Thomas, R.Q. Forecasting the Future of Southeastern U.S. Pine Forests in Response to Climate Change. Virginia Tech Math-Biology Seminar Series, Blacksburg, Virginia, April 2018

2017

37. Thomas, R.Q. Forecasting the future of southeastern U.S. pine forests, Clemson University Department of Forestry and Environmental Conservation Seminar Series. Clemson, South Carolina, October 2017.
38. Thomas, R.Q. Climate change and southern pines: using the rich history of research in the Southern U.S. to inform predictions, Belle W. Baruch Institute of Coastal Ecology and Forest Science, Clemson University, Georgetown, South Carolina, October 2017.
39. Thomas, R.Q. Disturbance and N limitation in Earth system models. NOVUS IV Workshop (an NSF sponsored research coordination network focused on ecosystem disturbance), Hubbard Brook, New Hampshire. September 2017.
40. Thomas, R.Q., S.J. Cheng, N.G. Smith, and W.R. Wieder. Evaluating the present and future of ecology in Earth system models. Ecological Society of America Annual Meeting, Portland, Oregon, August 2017.
41. Thomas, R.Q. Forecasting the future of southeastern U.S. pine forests. Visiting Scholar Seminar Series, University of Maryland, Center for Environmental Science, Appalachian Lab, Frostburg, Maryland, March 2017.

2016

42. Thomas, R.Q. Forecasting the future of southeastern U.S. pine forests. Forest Modeling Research Cooperative Annual Meeting. Brookeland, Texas, December 2016.

2015

43. Thomas, R.Q. Forecasting the Forests of the Future. Landsat Science Team Meeting. Blacksburg, Virginia, January 2015.
44. Thomas, R.Q. Forecasting the Forests of the Future. Virginia Tech College of Natural Resources and Environment Briefing Day, Blacksburg, Virginia, January 2015.
45. Thomas, R.Q. Observed canopy structures constrain carbon-nitrogen interactions through photosynthesis-respiration trade-offs. Department of Biology, Virginia Commonwealth University, Richmond, Virginia, September 2015.
46. Thomas, R.Q. Using conceptual theory and observations to evaluate mechanisms of N limitation in Earth system models. Ecological Society of America Annual Meeting. Baltimore, Maryland, August 2015.
47. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. Department of Environmental Science Seminar Series. University of Virginia, Charlottesville, Virginia, April 2015.
48. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. Department of Geography and Program in Ecology Seminar Series. The Pennsylvania State University, State College, Pennsylvania, February 2015.

2014

49. Thomas, R.Q. Nitrogen Limitation on Land: How Can It Exist in Earth System Models and What Are the Implications for Climate? University of Michigan Biological Station Summer Lecture Series, Pellston, Michigan, July 2014.
50. Thomas, R.Q. Nitrogen limitation on land: How can it occur in Earth system models? University of Edinburgh, School of Geosciences Seminar Series. Edinburgh, Scotland, June 2014.
51. Thomas, R.Q. Using ecosystem responses to N deposition and N fertilization inputs to evaluate models. INTERFACE Workshop: Using results from global change experiments to inform land model development and calibration. Beijing, China, May 2014.
52. Thomas, R.Q. Nitrogen limitation on land: How can it occur in Earth System Models? Community Land Model Tutorial, Boulder, Colorado, February 2014.

2013

53. Thomas, R.Q., G.B. Bonan, and C. Koven. Using experimental data of ecosystem response to N addition to improve predictions of coupled C and N cycling in Earth System models. American Geophysical Union Fall Meeting, San Francisco, California, December 2013.
54. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Atmospheric and Marine Research Division. Aspendale, Australia, April 2013.
55. Thomas, R.Q. Nitrogen cycling in the Community Land Model. Greencycles II Training Workshop IV: Nitrogen in the Earth System. Jena, Germany, February 2013 [Virtual].

2012

56. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. Environmental Science Seminar Series, University of New Hampshire, Durham, New Hampshire, November 2012.

57. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. Departments of Biological Sciences and Forest Resources and Environmental Conservation, Virginia Tech, Blacksburg, Virginia, February 2012.
58. Thomas, R.Q. Nitrogen constraints on terrestrial carbon sequestration, from trees to the globe. Department of Geography, Boston University, Boston, Massachusetts, February 2012.

16. CONTRIBUTED AND OTHER PRESENATIONS

[G]denotes mentored graduate student; [P]denotes mentored post-doc; [U]denotes mentored undergraduate student

2025

1. Shukla, R.[P], M.E. Lofton, A. Breef-Pilz, C.C. Carey, and R.Q. Thomas. Near-term Water Quality Forecasting and Uncertainty Analyses in Freshwater Ecosystems using Machine Learning. Poster. American Geophysical Union Fall Meeting, New Orlean, LA, December 15-19, 2025.
2. Sims, C., F. Olsson[P], R.Q. Thomas, M. Hipsey, A.D. Delany, A. Rumbelow, C.C. Carey. Forecasting with FLARE. Oral presentation. MODSIM conference, Adelaide, Australia, November 2025.
3. Carey, C.C., R.Q. Thomas, A. Breef-Pilz, A.D. Delany, M.E. Lofton, F. Olsson[P], D. Stanton, and R. Shukla[P]. Building the Global Center for Forecasting Freshwater Futures. Poster presentation. NSF Global Centers PI meeting. Alexandria, Virginia, September 2025.
4. Figueiredo, R.J., R.Q. Thomas, and C.C. Carey. FaaSr: Serverless workflows in R. Poster presentation. National Science Foundation CSSI PI meeting, Madison, Wisconsin, July 2025.
5. Thomas, R.Q. Lessons learned from five years of the NEON Ecological Forecasting Challenge. Oral. Ecological Session of America, Baltimore, MD, August 10-15, 2025.
6. Carey, C.C., F. Olsson[P], A. Breef-Pilz, A. Delany, and R.Q. Thomas. High-frequency monitoring data reveal substantial variability in the intrinsic predictability of freshwater ecosystems. Oral. Ecological Session of America, Baltimore, MD, August 10-15, 2025.
7. Kandel, B.[G], C.C. Carey, M. Johnson, A. Breef-Pilz, and R.Q. Thomas. Five years of eddy covariance data and structural equation modeling reveal an important role of water temperature and wind in controlling methane fluxes from a small reservoir. Oral. Ecological Session of America, Baltimore, MD, August 10-15, 2025.
8. Hoffman, K.[G], A. Delany, M. Eliassen, E. Harper, W. Woelmer, R.Q. Thomas, K. Weathers, and C.C. Carey. Water quality forecast visualization co-design: A case study from Lake Sunapee, New Hampshire, USA. Oral. Ecological Session of America, Baltimore, MD, August 10-15, 2025.
9. Lofton, M., R.Q. Thomas, A. Neog, S. Fatemi, A. Karpatne, A. Breef-Pilz, D. Howard[G], H. Wander[G], P. Hanson, and C.C. Carey. Multiple models improve the prediction of highly variable ecological time series: lessons learned from comparing eighteen models to predict freshwater phytoplankton. Oral. Ecological Session of America, Baltimore, MD, August 10-15, 2025.
10. Shukla, R.[P], A. Breef-Pilz, M. Lofton, C.C. Carey, and R.Q. Thomas. Harnessing Machine Learning and Explainable AI to Predict Phytoplankton Blooms and Identify Key Drivers in Freshwater Reservoirs. Poster. Ecological Session of America, Baltimore, MD, August 10-15, 2025.

11. Hoffman K.K. [G], A.D. Delany, W.M. Woelmer[G], R.Q. Thomas, K.C. Weathers, C.C. Carey Co-designing water quality forecast visualizations with community members: a case study from Lake Sunapee, New Hampshire, USA. Poster presentation. Ecological Forecasting Initiative 2025 Conference. Blacksburg, VA. May, 19, 2025.
12. Willson, A., H. Gallo, J.A. Peters, A. Abeyta, M.E. Lofton[RS], N. Bueno Watts, **C.C. Carey**, T. Moore[P], G. Smies, R.Q. Thomas, W. Woelmer[G], and J. McLachlan. Assessing opportunities and inequities in undergraduate ecological forecasting education. Poster presentation. Ecological Forecasting Initiative Conference. Blacksburg, Virginia. May 2025.
13. Olsson, F. [P], C.C. Carey, C. Boettiger, G. Harrison[U], R. Ladwig, M.F. Lapeyrolerie, A.S.L. Lewis[G], M.E. Lofton, F. Montealegre-Mora, J. Rabaey, C.J. Robbins, X. Yang, and R.Q. Thomas. What can we learn from 100,000 forecasts? A synthesis of submissions to the aquatics theme of the NEON Forecasting Challenge. Oral presentation. Ecological Forecasting Initiative Conference. Blacksburg, VA. May 21, 2025.
14. Shukla R. [P], A. Breef-Pilz, M.E. Lofton, C.C. Carey, R.Q. Thomas. Harnessing Machine Learning and Explainable AI to Predict Phytoplankton Blooms and Identify Key Drivers in Freshwater Reservoirs. Poster presentation. Ecological Forecasting Initiative Conference. Blacksburg, VA. May, 19, 2025.
15. Breef-Pilz A., A.D. Delany, V. Daneshmand, R.J. Figueiredo, R.Q.Thomas, C.C. Carey. An automated pipeline for processing and cleaning high-frequency environmental data for near-term, iterative water quality forecasts. Poster presentation. Ecological Forecasting Initiative Conference. Blacksburg, VA. May, 19, 2025.
16. Carey C.C., R.Q. Thomas, R.J. Figueiredo, A. Breef-Pilz, V. Daneshmand, A.D. Delany, M.R. Hipsey, K.K. Hoffman[G], R.P. McClure, F. Olsson[P], R. Paiz, H.L. Wander, W.M. Woelmer. Adventures in freshwater forecasting with the near-term, iterative Forecasting Lake And Reservoir Ecosystems (FLARE) System. Oral Presentation. Ecological Forecasting Initiative Conference. Blacksburg, VA, May, 19, 2025.
17. Delany A.D., R.Q. Thomas, C. Boettiger. Improving Forecast Discoverability with STAC. Poster presentation. Ecological Forecasting Initiative Conference. Blacksburg, VA. May, 19, 2025.

2024

18. Thomas, R.Q., C.C. Carey, R.J. Figueriedo, R. McClure, F.E. Olsson, R. Paiz, H.L. Wander, and W.M. Woelmer. The Forecasting Lake And Reservoir Ecosystems (FLARE) system: lessons learned from forecasting water quality across diverse applications. Oral Presentation. American Geophysical Union Fall Meeting. Washington, D.C., Conference Dates: (12-09-2024 – 12-13-2024).
19. Chowdhury, M.M.A, C.C. Carey, R.J. Figuerido, R. Gramacy, K. Hoffman, M.E. Lofton, P. Patil, M.E. Schreiber, R.Q. Thomas, and R. Caldler. Identifying Barriers and Bridging Gap Between Researchers and Decision Makers in Water Quality Modeling. Poster Presentation. American Geophysical Union Fall Meeting. Washington, D.C., Conference Dates: (12-09-2024 – 12-13-2024).
20. Howard, D., A. Breef-Pilz, A. Delany, M.E. Lofton, R.Q. Thomas, C.C. Carey. High Forecast Skill of Dissolved Organic Matter Concentration in Drinking Water Reservoirs. Poster Presentation. American Geophysical Union Fall Meeting. Washington, D.C., Conference Dates: (12-09-2024 – 12-13-2024).

21. Thomas, R.Q. The NEON Ecological Forecasting Challenge and the EFI-Research Coordination Network. Oral presentation. Ecological Forecasting Initiative Conference. Helsinki, Finland, June 2024.
22. Carey, C.C., R.Q. Thomas, A. Breef-Pilz, A.D. Delany, K.K. Hoffman, D.W. Howard, A.S.L. Lewis, M.E. Lofton, F. Olsson, M.E. Schreiber, and H.L. Wander. Introduction to VERA, the Virginia Ecoforecast Reservoir Analysis: a new freshwater ecosystem forecasting challenge. Poster presentation. Ecological Forecasting Initiative Conference. Helsinki, Finland, June 2024.
23. Lofton, M.E., T.N. Moore, W.M. Woelmer, R.Q. Thomas, and C.C. Carey. Macrosystems EDDIE: A modular curriculum to teach undergraduates ecological forecasting improves student and instructor confidence in their data science skills. Poster presentation. Ecological Forecasting Initiative Conference. Helsinki, Finland, June 2024
24. Lofton, M.E., T.N. Moore, W.M. Woelmer, R.Q. Thomas, and C.C. Carey. Macrosystems EDDIE: A modular curriculum to teach undergraduates ecological forecasting improves student and instructor confidence in their data science skills. Poster presentation. Association for the Sciences of Limnology and Oceanography Conference. Madison, Wisconsin, June 2024.
25. Olsson, F., C.C. Carey, C. Boettiger, G. Harrison, R. Ladwig, M.F. Lapeyrolerie, A.S.L. Lewis, M.E. Lofton, F. Montealegre-Mora, J. Rabaey, C.J. Robbins, X. Yang, and R.Q. Thomas. What can we learn from 100,000 freshwater forecasts? A synthesis of submissions to the aquatics theme of the NEON Ecological Forecasting Challenge. Oral presentation. Association for the Sciences of Limnology and Oceanography Conference. Madison, Wisconsin, June 2024.
26. Carey, C.C., R.Q. Thomas, A. Breef-Pilz, A.D. Delany, K.K. Hoffman, D.W. Howard, A.S.L. Lewis, M.E. Lofton, F. Olsson, M.E. Schreiber, and H.L. Wander. Introduction to VERA, the Virginia Ecoforecast Reservoir Analysis: a new freshwater ecosystem forecasting challenge. Oral presentation. Association for the Sciences of Limnology and Oceanography Conference. Madison, Wisconsin, June 2024.
27. Figueiredo, R., S. Park, C.C. Carey, and R.Q. Thomas. Function-as-a-service cloud computing for lake water quality forecasting: past, present, and future. Oral presentation. Association for the Sciences of Limnology and Oceanography Conference. Madison, Wisconsin, June 2024.
28. Lofton, M.E., T.N. Moore, W.M. Woelmer, R.Q. Thomas, and C.C. Carey. Macrosystems EDDIE: A modular curriculum to teach undergraduates ecological forecasting improves student and instructor confidence in their data science skills. Poster presentation. Annual NSF Macrosystems Biology PI meeting. Virtual. February 2024.
29. Carey, C.C., R.Q. Thomas, and M.E. Lofton. Macrosystems EDDIE: A modular curriculum for teaching ecological forecasting to undergraduates. Oral presentation. Annual NSF Macrosystems Biology PI meeting. Virtual. February 2024.
30. Holthuijzen, M., R.B. Gramacy, C. C. Carey, D. M. Higdon, R. Q. Thomas. Synthesizing data products, mathematical models, and observational measurements for lake temperature forecasting. Oral presentation. SIAM MPE4 (Mathematics of Planet Earth). Portland, OR, Conference dates (June 9-12, 2024)

2023

31. Olsson, F., Thomas, R. Q., & Carey, C. (2023). Power of multiple models in lake forecasting. In American Geophysical Union Fall Meeting. San Francisco, CA. Conference Dates: (12-11-2023 – 12-15-2023)
32. Holthuijzen, M., R.B. Gramacy, C. C. Carey, D. M. Higdon, R. Q. Thomas. Synthesizing data products, mathematical models, and observational measurements for lake temperature forecasting. Poster presentation. EnviBayes Workshop on Complex Environmental Data 2023. Fort Collins,CO (Sept 18-20, 2023)
33. Olsson, F., & Thomas, R. Q. (2023). Ecological Society of America workshop, Can Your Predict the Future? Introducing the NEON Ecological Forecasting Challenge. In Ecological Society of America Annual Meeting. Portland, OR.Conference Dates: (08-09-2023 – 08-11-2023)
34. Woelmer, W., Moore, T., Lofton, M., Thomas, R. Q., & Carey, C. (2023). Embedding communication concepts in forecasting training increases students' understanding of ecological uncertainty. In Ecological Society of America Annual Meeting. Portland, OR. Conference Dates: (08-06-2023 – 08-11-2023)
35. Lofton, M., Moore, T., Woelmer, W., Thomas, R. Q., & Carey, C. (2023). Macrosystems EDDIE: A modular curriculum to teach undergraduates ecological forecasting using R Shiny applications improves student confidence, familiarity, and conceptual understanding. In Ecological Society of America Annual Meeting. Portland, OR.Conference Dates: (08-06-2023 – 08-11-2023)
36. Figueiredo, R., Breef-Pilz, A., Carey, C., Daneshmand, V., Ku, Y. -J., & Thomas, R. Q. (2023). Cyberinfrastructure for End-to-end Near Real-time Forecasting Workflows in Lakes and Reservoirs: Architecture and Lessons Learned from a Multi-year Deployment. In Ecological Society of America Annual Meeting. Portland, OR. Conference Dates: (08-06-2023 – 08-11-2023)
37. Boettiger, C., & Thomas, R. Q. (2023). In search of simple, open, scalable data commons for ecological forecasting and biodiversity conservation. In American Geophysical Union Fall Meeting. San Francisco, CA.Conference Dates: (12-11-2023 – 01-19-2024)
38. Olsson, F., Boettiger, C., Carey, C., Harrison, G., Ladwig, R., Lewis, A., . . . Thomas, R. Q. (2023). Forecasting continental scale water quality: Updates from the Aquatics Theme of the EFI-NEON Ecological Forecasting Challenge. Poster session presented at the meeting of Ecological Forecasting Initiative Unconference 2023. Boulder, CO.
39. Carey, C., Lofton, M., Moore, T., Woelmer, W., & Thomas, R. Q. (2023). Learn and teach the foundations of ecological forecasting in self-paced modules. Poster session presented at the meeting of Ecological Forecasting Initiative Unconference 2023. Boulder, CO.
40. Lofton, M., Thomas, R. Q., Woelmer, W., Neog, A., Daw, A., Karpatne, A., . . . Carey, C. (2023). A multi-model ensemble to explore the limits of phytoplankton bloom prediction. Poster session presented at the meeting of Ecological Forecasting Initiative Unconference 2023. Boulder, CO.
41. Lofton, M., Thomas, R. Q., Woelmer, W., Neog, A., Daw, A., Karpatne, A., . . . Carey, C. (2023). A multi-model ensemble to explore the limits of phytoplankton bloom prediction. Poster session presented at the meeting of Ecological Society of America Annual Meeting. Portland, OR.

2022

42. Lewis, A.S.L.[G], W.W. Woelmer[G], H.L. Wander[G], D.W. Howard[G], J.W. Smith[G], R.P. McClure[P], M.E. Lofton[P], N.W. Hammond[G], R.S. Corrigan[G], R.Q. Thomas, and C.C. Carey. Near-term ecological forecasting: state of the field. Oral presentation. INTECOL conference, Geneva, Switzerland, August 2022. [virtual due to COVID]
43. Carey, C.C., R.P. McClure[P], T.N. Moore[P], W.M. Woelmer[G], C. Boettiger, R.J. Figueiredo, and R.Q. Thomas. Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S. Oral presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID].
44. McClure, R.P.[P], R.Q. Thomas, M.E. Lofton[P], W.M. Woelmer[G], and C.C. Carey. 2021. Iterative forecasting improves near-term predictions of methane ebullition rates. Oral presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID].
45. Wander, H.L.[G], R.Q. Thomas, T.N. Moore[P], A.G. Hounshell, and C.C. Carey. Optimizing monitoring strategies for forecasting: the effects of data assimilation frequency on near-term water temperature forecasts. Poster presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID].
46. Lofton, M.E.[P], R.Q. Thomas, T.N. Moore[P], W.M Woelmer[G], A. Breef-Pilz, R.P. McClure[P], A.S.L. Lewis[G], and C.C. Carey. Optimizing multiple data streams for assimilation into harmful algal bloom forecasts. Poster presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID].
47. Lewis, A.S.L.[G], W.W. Woelmer[G], H.L. Wander[G], D.W. Howard[G], J.W. Smith[G], R.P. McClure[P], M.E. Lofton[P], N.W. Hammond[G], R.S. Corrigan[G], R.Q. Thomas, and C.C. Carey. Near-term ecological forecasting: state of the field. Oral presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID]
48. Woelmer, W.M.[G], R.Q. Thomas, T.N. Moore[P], and C.C. Carey. Undergraduate student confidence and understanding of ecological forecasting concepts significantly increases after completing a Macrosystems EDDIE module. Poster presentation. Ecological Forecasting Initiative conference, May 2022. [virtual due to COVID]
49. Carey, C.C., R.P. McClure[P], T.N. Moore[P], W.M. Woelmer[G], C. Boettiger, R.J. Figueiredo, and R.Q. Thomas. Near-term forecasts of NEON lakes reveal gradients of environmental predictability across the U.S. Oral presentation. Association for the Society of Limnology and Oceanography, Grand Rapids, Michigan, May 2022. [virtual due to COVID]
50. Lofton, M.E.[P], R.Q. Thomas, T.N. Moore[P], W.M Woelmer[G], A. Breef-Pilz, R.P. McClure[P], A.S.L. Lewis[G], and C.C. Carey. Optimizing multiple data streams for assimilation into harmful algal bloom forecasts. Oral presentation. Association for the Society of Limnology and Oceanography, Grand Rapids, Michigan, May 2022.
51. Wander, H.L.[G], R.Q. Thomas, T.N. Moore[P], A.G. Hounshell, and C.C. Carey. Data availability affects forecast skill of 1-35 day water temperature forecasts in a eutrophic drinking water reservoir. Oral presentation. Association for the Society of Limnology and Oceanography, Grand Rapids, Michigan, May 2022.
52. Moore, T.N.[P], C.C. Carey, and R.Q. Thomas. A multi-model ensemble improves the accuracy of hydrodynamic forecasts in a reservoir. Oral presentation. Association for the Society of Limnology and Oceanography, Grand Rapids, Michigan, May 2022. [virtual due to COVID]
53. Figueiredo, R.J., C.C. Carey, R.Q. Thomas, A. Breef-Pilz, V. Daneshmand, K. Subratie, and Y.-J. Ku. Edge-to-cloud cyberinfrastructure for near real-time ecological forecasting in

aquatic ecosystems. Oral presentation. Association for the Society of Limnology and Oceanography, Grand Rapids, Michigan, May 2022. [virtual due to COVID]

2021

54. Ahlswede, B.J.[G], T.L. O'Halloran, and R.Q. Thomas. Comparing the Biogeophysical and Biogeochemical Trade-Offs of a Pine Plantation vs a Bioenergy Cropland. American Geophysical Union. New Orleans, Louisiana, December 2021. [virtual due to COVID]
55. D'Acunha, B., A.G. Hounshell[P], A. Breef-Pilz, R.Q. Thomas, M.S. Johnson, and C.C. Carey. Eddy covariance data reveal that small freshwater reservoirs emit a substantial amount of carbon dioxide and methane. Poster presentation. American Geophysical Union. New Orleans, Louisiana, December 2021. [virtual due to COVID]
56. Figueiredo, R.J., V. Daneshmand, Y.-J. Ku, K. Subratie, A. Breef-Pilz, C.C. Carey, and R.Q. Thomas. Cyberinfrastructure for near real-time water quality forecasting in lakes and reservoirs. Oral presentation. American Fisheries Society. Baltimore, Maryland, November 2021. [virtual due to COVID]
57. Lofton, M.E.[P], R.Q. Thomas, W.M. Woelmer[G], T.N. Moore[P], R.P. McClure[P], A.S. Lewis[G], and C.C. Carey. Assessing model parameter sensitivity of phytoplankton functional groups in a one-dimensional lake ecosystem model. Poster presentation. Global Lakes Ecological Observatory Network (GLEON) conference, October 2021. [virtual due to COVID.
58. Wander, H.L.[G], R.Q. Thomas, T.N. Moore[P], R.P. McClure[G], W.M. Woelmer[G], V. Daneshmand, R.J. Figueiredo, and C.C. Carey. Predicting 16-day water temperature and dissolved oxygen in a eutrophic drinking water reservoir using an open-source forecasting system. Poster presentation. Global Lakes Ecological Observatory Network (GLEON) conference, October 2021. [virtual due to COVID]
59. Moore, T.N.[P], R.Q. Thomas, W.M. Woelmer[G], and C.C. Carey. Macrosystems EDDIE: Benefits of integrating ecological forecasting into undergraduate ecology curricula. Poster presentation. Global Lakes Ecological Observatory Network (GLEON) conference, October 2021. [virtual due to COVID]
60. Moore, T.N.[P], C.C. Carey, W.M. Woelmer[G], and R.Q. Thomas. Macrosystems EDDIE: Teaching Ecological Forecasting to Undergraduates. Oral Presentation and Workshop. Ecological Society of America. Long Beach, California, August 2021. [virtual due to COVID]
61. McClure, R.P.[P], C.C. Carey, V. Daneshmand[G], R.J. Figueiredo, T. Moore[P], and R.Q. Thomas. Application of a novel near-term, iterative water quality forecasting workflow to NEON lakes. Poster presentation. Ecological Society of America. Long Beach, California, August 2021. [virtual due to COVID]
62. McClure, R.P.[P], C.C. Carey, V. Daneshmand, R.J. Figueiredo, T.N. Moore[P], R.Q. Thomas. Application of an iterative, near-term water temperature forecasting workflow in NEON lakes. Oral presentation. Incorporating Data Science and Open Science in Aquatic Research Summit, July 2021. [virtual due to COVID]
63. Wander, H.L.[G], R.Q. Thomas, A.G. Hounshell[P], V. Daneshmand[G], R.J. Figueiredo, R.P. McClure[P], and C.C. Carey. Application of an open-source forecasting system for predicting future water temperature and dissolved oxygen in a eutrophic drinking water reservoir. Poster presentation. Association for the Society of Limnology and Oceanography, Mallorca, Spain, June 2021. [virtual due to COVID]

64. Carey, C.C., P.C. Hanson, R.Q. Thomas, A.B. Gerling[G], A.G. Hounshell[P], M.E. Lofton[G], R.P. McClure[G], B.R. Niederlehner, H.L. Wander[G], and W.M. Woelmer[G]. Anoxia alters freshwater ecosystem stoichiometry and decreases carbon and nutrient retention in reservoirs. Oral presentation. Association for the Society of Limnology and Oceanography, Mallorca, Spain, June 2021. [virtual due to COVID]
65. Hammond, N.W.[G], M.E. Schreiber, B.J. Bookout, R.S. Corrigan, F. Birgand, R. Q. Thomas, and C.C. Carey. Assessing short-term variability of iron and manganese cycling in a drinking-water reservoir using a high-frequency water quality sensor. Geological Society of America Southeastern Section Meeting, Auburn, Alabama, April 2021. [virtual due to COVID]

2020

66. D'Acunha, B., A. Hounshell, H.L. Wander[G], R.Q. Thomas, C.C. Carey, and M.S. Johnson. Fluxes of CO_2 and CH_4 from a small, eutrophic, managed reservoir as determined by eddy covariance. Oral presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
67. Lewis, A.[G], M.E. Lofton, R. McClure[G], W.M. Woelmer[G], P.C. Hanson, R.Q. Thomas. and C.C. Carey. Near-term, iterative forecasts highlight the relative importance of two drivers for dynamic oxygen concentrations in a drinking water reservoir. Oral presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
68. Carey, C.C., R.Q. Thomas, R.J. Figueiredo, M. Dietze. The power and potential for iterative, near-term ecological forecasting to advance freshwater science, Poster presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
69. McClure, R.[G], R.Q. Thomas, M.E. Lofton, W.M. Woelmer and C.C Carey. Near-term, iterative forecasting suggests high predictability of reservoir methane ebullition at weekly time scales. Poster presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
70. Thomas, R.Q., C. Boettiger, C.C. Carey, M. Dietze, A. Fox, M.A. Kenney, C.M. Laney, J.S. McLachlan, J. Peters, J.F. Weltzin, W.M. Woelmer, J.R. Foster, J.P. Guinnip, A. Spiers, S. Ryan, K.I. Wheeler, A.R. Young, and L.R. Johnson. Introducing the NEON Ecological Forecasting Challenge hosted by the Ecological Forecasting Initiative Research Coordination Network. Poster presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
71. McNellis, R.[G], N. van Gestel, R.Q. Thomas, and N.G. Smith. Winter cover cropping increases albedo and latent heat flux in the Texas High Plains. Poster presentation. American Geophysical Union Fall Meeting, Virtual, December 2020.
72. Carey, C.C., W.M. Woelmer[G], M.E. Lofton, R.J. Figueiredo, B.J. Bookout, R.S. Corrigan[G], V. Daneshmand[G], A.G. Hounshell, D.W. Howard, A.S.L. Lewis, R.P. McClure[G], H.L. Wander[G], N.K. Ward, and R.Q. Thomas. Advancing lake and reservoir water quality management with near-term, iterative ecological forecasting. Poster presentation. Ecological Society of America, Salt Lake City, Utah, August 2020. [virtual due to COVID]
73. Lewis, A.S.L., M.E. Lofton, R.P. McClure[G], W.M. Woelmer[G], P.C. Hanson, R.Q. Thomas, and C.C. Carey. Near-term, iterative ecological forecasts provide insight into the drivers of changing oxygen concentrations in a drinking water reservoir. Poster presentation. Ecological Society of America, Salt Lake City, Utah, August 2020. [virtual due to COVID]

74. McClure, R.P.[G], R.Q. Thomas, M.E. Lofton, W.M. Woelmer[G], and C.C. Carey. Near-term iterative forecasting and data assimilation improve methane ebullition rate estimates in a small reservoir. Poster presentation. Ecological Society of America, Salt Lake City, Utah, August 2020. [virtual due to COVID]
75. Dietze, M.C., and 27 co-authors, including R.Q. Thomas. Improving ecological prediction: the role of cross-network data fusion in iterative ecological forecasting. Oral presentation. Ecological Society of America, Salt Lake City, Utah, August 2020. [virtual due to COVID]
76. Carey, C.C., R.Q. Thomas, R.J. Figueiredo, and M.C. Dietze. The power and potential for iterative, real-time ecological forecasting to advance the aquatic sciences. Oral presentation. Association for the Society of Limnology and Oceanography, Madison, Wisconsin, June 2020. [cancelled due to COVID]
77. Woelmer, W.M.[G], B.J. Bookout, M.E. Lofton, R.P. McClure[G], R.Q. Thomas, and C.C. Carey. Near-term iterative hindcasts at multiple time scales improves understanding of phytoplankton dynamics. Oral presentation. Association for the Society of Limnology and Oceanography, Madison, Wisconsin, June 2020. [cancelled due to COVID]
78. McClure, R.P.[G], R.Q. Thomas, M.E. Lofton , W.M. Woelmer [G], and C.C. Carey. Iterative near-term forecasts improve estimates of methane ebullition efflux from a small temperate reservoir. Oral presentation. Association for the Society of Limnology and Oceanography, Madison, Wisconsin, June 2020. [cancelled due to COVID]
79. Figueiredo, R.J., V. Daneshmand[G], C.C. Carey, and R.Q. Thomas. End-to-end ecological forecasting: cyber-infrastructure challenges and frontiers from sensors to clouds. Oral presentation. Association for the Society of Limnology and Oceanography, Madison, Wisconsin, June 2020. [cancelled due to COVID]
80. Woelmer, W.M.[G], M.E. Lofton, R.P. McClure[G], B.J. Bookout, R.Q. Thomas, and C.C. Carey. Translating forecasts of algal blooms into decision support tools for drinking water management. Oral presentation. Virginia Water Conference, Richmond, Virginia, March 2020.

2019

81. Ahlswede, B.J. [G], R.Q. Thomas, and T.L. O'Halloran. Controls on Land Surface Temperature along a Gradient of Managed Land-Cover Types in Central Virginia. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2019.
82. Rady, J.M.[G], J.K. Shuman, and R.Q. Thomas. Leveraging Data from Forest Manipulation Experiments to Understand and Improve a Global Dynamic Vegetation Model. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2019.
83. Thomas, R.Q., C.C. Carey, M.E. Lofton, and W.M. Woelmer[G]. Near-term iterative forecasting of water quality in a reservoir reveals relative forecastability of physical, chemical, and biological dynamics. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2019.
84. McClure, R. [G], R. Q. Thomas, M.E. Lofton, W.M. Woelmer[G], A. M. Mickens, and C. C. Carey. Successful real-time prediction of methane ebullition rates in a eutrophic reservoir using temperature via iterative near-term forecasts. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2019.

85. Thomas, R.Q., R.J. Figueiredo, M.E. Lofton, R.P. McClure[G], W.W. Woelme[G]r, and C.C. Carey. Near-term iterative forecasting with GLM-AED and daily data assimilation reveals the forecastability of water quality dynamics. Poster presentation. 21st GLEON meeting, Huntsville, Ontario, Canada, November 2019.
86. McClure, R.P. [G], R.Q. Thomas, M.E. Lofton, W.M. Woelmer[G], A.M. Mickens, and C.C. Carey. Successful real-time prediction of methane ebullition rates in a eutrophic reservoir using temperature via iterative near-term forecasts. Poster presentation. 21st GLEON meeting, Huntsville, Ontario, Canada, November 2019.
87. Woelmer, W.M. [G], M.E. Lofton, R.P. McClure[G], B.J. Bookout, R.Q. Thomas, and C.C. Carey. Looking backward to look forward: forecasting phytoplankton in a drinking water reservoir using multiple modeling approaches. Poster presentation. 21st GLEON meeting, Huntsville, Ontario, Canada, November 2019.
88. Dietze, M.C., P.B. Alder, C.C. Carey, M. Kenney, A. Fox, A. Janetos, L.R. Johnson, C. Laney, H.J. Lynch, J.S. McLachlan, J.A. Peters, R.Q. Thomas, J.F. Weltzin, and E.P. White. Building an ecological forecasting community. Oral presentation. Ecological Society of America Annual Meeting, Louisville, Kentucky, August 2019.
89. Woelmer, W.M. [G], B.J. Bookout, M.E. Lofton, R.P. McClure[G], R.Q. Thomas, and C.C. Carey. Forecasting water quality in a drinking water reservoir: An ensemble model approach. Oral presentation. Ecological Society of America Annual Meeting, Louisville, Kentucky, August 2019.
90. Figueiredo, R. J., C. C. Carey, R. Q. Thomas, V. Daneshmand[G], and B. Bookout. End-to-end ecological forecasting: Cyber-infrastructure challenges and frontiers from sensors to clouds. Oral presentation. Ecological Society of America Annual Meeting, Louisville, Kentucky, August 2019.
91. Carey, C. C., R.J. Figueiredo, R.Q. Thomas, B.J. Bookout, V. Daneshmand[G], M.E. Lofton, R.P. McClure[G], and W.M. Weolmer. All-hands-on-deck data management: Building the team, tools, and workflows to forecast future water quality. Oral presentation. Ecological Society of America Annual Meeting, Louisville, Kentucky, August 2019.
92. Woelmer, W.M. [G], R.Q. Thomas, R. Figueiredo, V. Daneshmand [G], and C.C. Carey. Integrating sensor networks and real-time ecological forecasting to adaptively manage water quality. Oral presentation. Oral presentation. Virginia Forests and Drinking Water Forum. Charlottesville, Virginia. June 2019.
93. Carey, C.C., R.Q. Thomas, R.J. Figueiredo, V. Daneshmand[G], and B.J. Bookout. Integrating high-frequency environmental sensors, overlay virtual private networks, and simulation models in an end-to-end workflow to generate real-time iterative water quality forecasts. Oral presentation. Ecological Forecasting Initiative Conference, Washington, D.C., May 2019.
94. Smith, J.W.[G], L.R. Johnson, and R.Q. Thomas. Bayesian parameter estimation for ecosystem state space models with linear autoregressive process models. Poster presentation. Ecological Forecasting Initiative Conference, Washington, D.C., May 2019.
95. Woelmer, W.M. [G], B.J. Bookout, M.E. Lofton, R.P. McClure, R.Q. Thomas, and C.C. Carey. Forecasting harmful algal blooms in a drinking water reservoir: an ensemble model approach. Poster presentation. Ecological Forecasting Initiative Conference, Washington, D.C., May 2019.
96. Woelmer, W.M.[G], M.E. Lofton, R.P. McClure[G], B.J. Bookout, R.Q. Thomas, and C.C. Carey. Analysis of historical monitoring data to forecast future phytoplankton blooms in a

small drinking water reservoir. Oral presentation. Virginia Water Conference, Richmond, Virginia, March 2019.

97. Carey, C.C., R.Q. Thomas, R.J. Figueiredo, M.E. Lofton, B.J. Bookout, V. Daneshmand[G], D. Howard, R.P. McClure[G], and W.W. Woelmer[G]. Real-time ecological forecasting enables adaptive water quality management in a drinking water reservoir. Oral presentation. Virginia Water Conference, Richmond, Virginia, March 2019.
98. Rady, J.M. [G], B.J. Ahlswede[G], and R.Q. Thomas. Forest Management in Space and Time: When it Matters and When it Doesn't. Oral presentation. CESM Land Model Working Group Spring meeting, Boulder, Colorado, February 2019.
99. Carey, C.C., R. Q. Thomas, R.J. Figueiredo, V. Daneshmand[G]. Real-time ecological forecasting enables adaptive water quality management in a drinking water reservoir. Association for the Sciences of Limnology and Oceanography 2019 Aquatic Sciences Meeting, San Juan, PR, February 2019.

2018

100. Graham, M.W.[G], R.Q. Thomas, B.D. Strahm, and M.E. O'Rourke. Examining historical impacts and mitigation potential of soil tillage practices in the Community Land Model. Oral presentation. American Geophysical Union Fall Meeting, Washington, D.C., December 2018.
101. Rady, J.M.[G], B.J. Ahlswede[G], and R.Q. Thomas. The Influence of a More Explicit Representation of Forest Management on Carbon Sequestration in the Community Land Model. Poster presentation. American Geophysical Union Fall Meeting, Washington, D.C., December 2018.
102. Thomas. R.Q., A. Jersild[G], E.B. Brooks, V.A. Thomas, and R.H. Wynne. Forecasting mid-century forest productivity by assimilating regional observations from plot networks and ecosystem experiments into a process-based model. Poster presentation. American Geophysical Union Fall Meeting, Washington, D.C., December 2018.
103. Carey, C.C., R.Q. Thomas, R.J. Figueiredo, V. Daneshmand[G], B.J. Bookout, and F. Birgand. Integrating environmental sensor networks and real-time ecological forecasting to adaptively manage water quality. Poster presentation. 20th GLEON meeting, Rottnest Island, Australia, December 2018.
104. Carey, C.C., R.J. Figueiredo, R.Q. Thomas, F. Birgand, J.C. Little, M.E. Schreiber, and M.G. Sorice. Resilient water systems: Integrating environmental sensor networks and real-time forecasting to adaptively manage water quality and build social trust. Poster presentation. National Science Foundation Smart and Connected Communities Principal Investigator Meeting. Kansas City, Missouri, March 2018.

2017

105. Ahlswede, B.J. [G], R.Q. Thomas, T.L. O'Halloran, J.M. Rady[G], and J. LeMoine. Seasonality and Management Affect Land Surface Temperature Differences Between Loblolly Pine and Switchgrass Ecosystems in Central Virginia. Poster presentation. American Geophysical Union Fall Meeting, Washington, D.C., December 2017.
106. Horn, K. J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M. E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Species- to continental-scale influences of nitrogen and sulfur deposition on tree growth and mortality across the

conterminous United States. Oral presentation. American Geophysical Union Fall Meeting, Washington, D.C., December 2017.

107. Carey, C.C., R.J. Figueiredo, R.Q. Thomas, F. Birgand, J.C. Little, M.E. Schreiber, and M.G. Sorice. Integrating environmental sensor networks and real-time forecasting to adaptively manage drinking water quality and build social trust. Poster presentation. 19th GLEON meeting, Mohonk, New York, November 2017.
108. Horn, K.J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M.E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Individual tree species responses to concurrent nitrogen and sulfur deposition across the contiguous United States. Oral presentation. National Atmospheric Deposition Program Annual Meeting, San Diego, California, October 2017.
109. Horn, K.J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M.E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Continental-scale impact of concurrent atmospheric nitrogen and sulfur deposition on individual tree species. Oral presentation. Ecological Society of America Annual Meeting, Portland, Oregon, August 2017.
110. Thomas, R.Q. and J.M. Rady[G]. Harvesting more wood from less area: Simulating the intensification of forest management in the CLM. Oral presentation. Community Land Model Spring Meeting, Boulder, Colorado, February 2017.

2016

111. Thomas, R.Q, T.L. O' Halloran, and B.J. Ahlswede[G]. Climate regulation ecosystem services of biofuels: a new paired flux tower study using comparing loblolly pines and switchgrass ecosystems. Poster presentation. American Geophysical Union Fall Meeting. San Francisco, California, December 2016.
112. O'Halloran, T.L, R.Q. Thomas, and B.J. Ahlswede[G]. Environmental Controls on Loblolly Pine Productivity in Central Virginia. Poster presentation. American Geophysical Union Fall Meeting. San Francisco, California, December 2016.
113. Horn, K.J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M.E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Enhanced Carbon Uptake from Nitrogen Deposition in North American Forests is a Species Dependent Phenomenon. Poster presentation. American Geophysical Union Fall Meeting. San Francisco, California, December 2016.
114. Horn, K.J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M. E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Assessing regional impacts of N deposition on forests through species specific responses. Oral Presentation. National Atmospheric Deposition Program meeting, Santa Fe, New Mexico, October 2016.
115. Horn, K.J.[P], R.Q. Thomas, L.H. Pardo, C.M. Clark, M. E. Fenn, G.B. Lawrence, S. Perakis, E.A.H. Smithwick, D. Baldwin, S. Braun, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S.B. St.Clair, R. Warby, and S. Watmough. Changes in Tree Growth and Survival in Response to Atmospheric Nitrogen Deposition for the Contiguous United States. Oral

presenation. National Atmospheric Deposition Program CLAD Focus meeting, Madison, Wisconsin, April 2016.

116. Ahlswede, B.J.[G], R.Q. Thomas, and T.L. O'Halloran. The Two Towers: An ecosystem story as told by the atmosphere. Oral presentation. Virginia Tech Department of Forest Resource and Environmental Conservation Seminar Series, Blacksburg, Virginia, April 2016.
117. Ahlswede, B.J.[G], R.Q. Thomas, and T.L. O'Halloran. The Two Towers: An ecosystem story as told by the atmosphere. Poster presentation. Interfaces of Global Change Symposium, Blacksburg, Virginia, April 2016.
118. Jersild, A.L.[G], R.Q. Thomas, E.B. Brooks, R. Teskey, R. Wynne, D.A. Sampson, C. Gonzalez, T. Fox, V.A. Thomas, and L. Smallman. Relative role of parameter vs. climate uncertainty for predictions of future Southeastern U.S. pine carbon cycling. Oral presentation. Virginia Space Grant Consortium Conference Hampton, Virginia, April 2016.
119. Jersild, A.L.[G], R.Q. Thomas, E.B. Brooks, R. Teskey, R. Wynne, D.A. Sampson, C. Gonzalez, T. Fox, V.A. Thomas, and L. Smallman. Relative role of parameter vs. climate uncertainty for predictions of future Southeastern U.S. pine carbon cycling. Oral presentation. Virginia Tech Graduate Student Research Conference, Blacksburg, Virginia, March 2016.
120. Dallas, E., T.L. O'Halloran, and R.Q. Thomas. Investigating effect of forest management on light use efficiency in loblolly pine. Poster presentation. American Geophysical Union Virtual Poster Showcase. Virtual. February 2016.

2015

121. Jersild, A.L.[G], R.Q. Thomas, E.B Brooks, R. Teskey, R. Wynne, D.A. Sampson, C. Gonzalez, T. Fox, V. Thomas, and L. Smallman. Relative role of parameter vs. climate uncertainty for predictions of future Southeastern U.S. pine carbon cycling. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
122. Clark, C.M., K.J. Horn[P], R.Q. Thomas, S. Simkin, L.H. Pardo, T. Blett, G.B. Lawrence, S. Belyazid, and J.N. Phelan. Synthesis of recent advances in critical loads research on impacts from atmospheric nitrogen deposition on terrestrial plant communities. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
123. Thomas, R.Q., A.L. Jersild[G], E.B. Brooks, R.H. Wynne, D.A. Sampson, C.A. Gonzalez-Benecke, R.O. Teskey, and E.J. Ward. Predicting future productivity of Southeastern U.S. pine ecosystems in a changing climate using data assimilation with diverse data sources. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
124. Ward, E. J., R.Q. Thomas, G. Sun, S.G. McNulty, J.-C. Domec, A. Noormets, and J.S. King. Incorporating Ecosystem Experiments and Observations into Process Models of Forest Carbon and Water Cycles: Challenges and Solutions. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
125. Bonan, G.B., D. Lombardozzi, W.R. Wieder, K.T. Lindsay, and R.Q. Thomas. Chasing Perfection: Should We Reduce Model Uncertainty in Carbon Cycle-Climate Feedbacks. Oral presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
126. Ensor, B. L., D. Scott, B.D. Strahm, R.Q. Thomas, and E.T. Hester. Spatial and Temporal Trends in Greenhouse Gas Fluxes from a Temperate Floodplain Along a Stream-Riparian-

Upland Gradient. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.

127. Cheng, S.J., R.Q. Thomas, J.V. Wilkening, P. Curtis, T.D. Sharkey, and K.J. Nadelhoffer. Testing Earth System Model Assumptions of Photosynthetic Parameters with *in situ* Leaf Measurements from a Temperate Zone Forest. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2015.
128. Perry, C.H., K.J. Horn[P], R.Q. Thomas, L.H. Pardo, E.A.H. Smithwick, D. Baldwin, G.B. Lawrence, S.W. Bailey, S. Braun, C.M. Clark, M. Fenn, A. Nordin, J.N. Phelan, P.G. Schaberg, S. St. Clair, R. Warby, S. Watmough, and S.S. Perakis. Repeated measures from FIA data facilitates analysis across spatial scales of tree growth responses to nitrogen deposition from individual trees to whole ecoregions. Oral presentation. 12th biennial Forest Inventory and Analysis symposium, Portland, Oregon, December 2015.
129. Horn, K.J.[P], R.Q. Thomas, E.A.H. Smithwick, L.H. Pardo, D. Baldwin, G.B. Lawrence, S.W. Bailey, S. Braun, C.M. Clark, M. Fenn, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S. St. Clair, R. Warby, S. Watmough, and S. Perakis. Continental Scale Analysis of Tree Growth, Mortality, and Recruitment Responses to Nitrogen Deposition Reveal Regional and Species-specific variability that May Enhance and Concentrate Mitigation Efforts. Oral presentation. 9[Th] International Conference on Acid Deposition. Rochester, New York, October 2015.
130. Horn, K.J.[P], R.Q. Thomas, E.A.H. Smithwick, L.H. Pardo, D. Baldwin, G.B. Lawrence, S.W. Bailey, S. Braun, C.M. Clark, M. Fenn, A. Nordin, C.H. Perry, J.N. Phelan, P.G. Schaberg, S. St. Clair, R. Warby, S. Watmough, and S. Perakis. Species Specific Asynchronies in the Response of Tree Growth and Mortality to Nitrogen Deposition at the Continental Scale. Oral presentation. 100th Ecological Society of America Annual Meeting. Baltimore, Maryland, August 2015.
131. Ahlswede, B.J.,[G] and R.Q. Thomas. What to plant and where to plant it; modeling the biophysical effects of temperate forests on climate using the Community Earth System Model. Poster presentation. 100th Ecological Society of America Annual Meeting. Baltimore, Maryland, August 2015.
132. Smithwick, E.A.H., D. Baldwin, L. H. Pardo, R.Q. Thomas, K.J. Horn[P], G.B. Lawrence, S.W. Bailey, S. Braun, C.M. Clark, M. Fenn, A. Nordin, S.S. Perakis, C.H. Perry, J.N. Phelan, P.G. Schaberg, S. St.Clair, R. Warby, and S. Watmough. Linking plants and soils to understand ecosystem thresholds in response to N deposition at a continental level. Oral presentation. 100th Ecological Society of America Annual Meeting. Baltimore, Maryland, August 2015.
133. Thomas, R.Q., and B.J. Ahlswede[G]. Towards forestry in the Community Land Model. Oral presentation. Spring Land-Biogeochemistry Community Earth System Model Working Group Meeting. Boulder, Colorado, February 2015.

2014

134. Thomas, R.Q. and M. Williams. A model using marginal efficiency of investment to analyze carbon and nitrogen interactions in forested ecosystems. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2014.
135. Ahlswede, B. J.,[G] and R.Q. Thomas. Sub-biome variability in the biophysical influence of forests on climate using the Community Earth System Model. Poster presentation. American Geophysical Union Fall Meeting, San Francisco, California, December 2014.

136. Ahlswede, B. J.,[G] and R.Q. Thomas. Biophysical Effects of Sub-Biome Deforestation and Implications for Future Forest Management in the Southeast. Poster presentation. PINEMAP Annual Meeting, Athens, Georgia, May 2014.
137. Ahlswede, B. J.,[G] and R.Q. Thomas. The Community Earth System Model at Virginia Tech. Poster presentation. Virginia Tech High Performance Computing Day Poster Session, Blacksburg, VA, April 2014.

2013

138. Pardo, L.H., M. J. Robin-Abbott, C.M. Clark, L.H. Geiser, J.A. Lynch, C.B. O'Dea, S. Simkin, D.C. Baldwin, K.J. Horn[P], E.A.H. Smithwick, and R.Q. Thomas. Towards a new uncertainty framework for empirical loads. Oral presentation. U.S. National Acid Deposition Program Annual Meeting. Indianapolis, Indiana, October 2013.
139. Smithwick E.A. H., D.C. Baldwin, K.J. Horn[P], L.H. Pardo, and R.Q. Thomas. Integrating Plant Response with Soil Chemistry at a Continental Scale. Oral presentation. U.S. National Acid Deposition Program Annual Meeting. Indianapolis, Indiana, October 2013.
140. Thomas, R.Q. Challenges modeling C:N interactions in terrestrial models. Oral presentation. PnET Modeling Workshop at the University of New Hampshire, Durham, New Hampshire, May 2013

2012

141. Thomas, R.Q., G.B. Bonan, and C.L. Goodale. Evaluating alternative approaches to modeling terrestrial C and N interactions using observations of ecosystem response to nitrogen deposition and experimental fertilization. Oral presentation. American Geophysical Union Fall meeting. San Francisco, California, December 2012.
142. Thomas, R.Q., G.B. Bonan, and C.L. Goodale. Using observation and experimental data to improve carbon and nitrogen cycling in Earth System models. Poster presentation. NSF RCN FORECAST conference "New Perspectives on Data Assimilation in Global Change Science", Woods Hole, Massachusetts, October 2012.
143. Thomas, R.Q., S. Zaehle, P.H. Templer, and C.L. Goodale. Global pattern of nitrogen limitation: Confronting two global biogeochemical models with observations. Oral presentation. Community Earth System Model - Spring Working Group Meeting. Boulder, Colorado, March 2012.
144. Thomas, R.Q., G.B. Bonan, and C.L. Goodale. Insights into mechanisms governing forest carbon response to nitrogen deposition: a model-data comparison using observed responses to nitrogen addition. Oral presentation. Community Earth System Model - Spring Working Group Meeting. Boulder, Colorado, February 2012.

2011

145. Thomas, R.Q., S. Zaehle, P.H. Templer, and C.L. Goodale. An inter-comparison of nitrogen limitation in global land surface models with carbon and nitrogen cycles (CLM-CN and O-CN). Oral presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2011.
146. Thomas, R.Q., S. Zaehle, P.H. Templer, and C.L. Goodale. An inter-comparison of nitrogen limitation in global land surface models with carbon and nitrogen cycles (CLM-CN and O-CN). Poster presentation. 27th New Phytologist symposium: Stoichiometric Flexibility in Terrestrial Ecosystems, Oracle, Arizona, September 2011.

147. Goodale, C.L., R.Q. Thomas, M.S. Weiss, C. Tonitto. Nitrogen deposition effects on forest carbon storage, Nitrogen and the Human Endeavor. Oral presentation. American Chemical Society annual meeting, Denver, Colorado, August 2011
148. Yanai, R.D., E.B. Rastetter, M.C. Fisk, T.J. Fahey, R.Q. Thomas, and M.A. Vadeboncoeur. Multi-Element Limitation: Simulation and Measurements Suggest that P is More Limiting than N in Young Northern Hardwood Ecosystems. Oral presentation. Ecological Society of America Annual Meeting, Austin, Texas, August 2011.
149. Thomas, R.Q., C.L. Goodale, G.B. Bonan, N.M. Mahowald, D.M. Ricciuto, and P.E. Thornton. An evaluation of carbon-nitrogen coupling in a global land surface model (CLM-CN) using plot-level nitrogen fertilization experiments. Poster presentation. INTERFACE Meeting: How do we improve Earth system models? Integrating Earth system models, ecosystem models, experiments and long-term data, Captiva Island, Florida, March 2011.
150. Thomas, R.Q., C.L. Goodale, G.B. Bonan, N.M. Mahowald, D.M. Ricciuto, and P.E. Thornton. The role of nitrogen availability in land-atmosphere interactions: a systematic evaluation of carbon-nitrogen coupling in a global land surface model using plot-level nitrogen fertilization experiments. Poster presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2011.

2005 - 2010

151. Hurtt, G.C., R. Dubayah, J. Fisk, R.Q. Thomas, K.A. Dolan, and H.H. Shugart. Terrestrial Ecosystem Dynamics Over Complex Terrain: Challenges for the Future. Oral presentation. America Geophysical Union Fall meeting, San Francisco, California, December 2010
152. Thomas, R.Q. Nitrogen and the global carbon cycle: Insights from experimental N additions and N deposition gradients. Oral presentation. Community Climate Model Biogeochemistry Working Group Meeting, National Center for Atmospheric Research, Boulder, Colorado, February 2010.
153. Goodale, C.L., R.Q. Thomas, F. Dentener, M.B. Adams, J. Baron, B. Emmett, C.D. Evans, I. Fernandez, P. Gundersen, F. Hagedorn, G. Lovett, A. Kulmatiski, S. McNulty, F. Moldan, A. Melvin, S. Ollinger, P. Schleppi, and M. Weiss. Nitrogen Deposition and Forest Carbon Sequestration: A Quantitative Review from Plot to Global Scales. Oral presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2009.
154. Thomas, R.Q., C.D. Canham, K.C. Weathers, and C.L. Goodale. Nitrogen deposition increases tree carbon storage and shifts species' competitive balance. Oral presentation. National Atmospheric Deposition Program Meeting, Saratoga Springs, New York, October 2009.
155. Thomas, R.Q., C. D. Canham, K. C. Weathers, and C. L. Goodale. Seeing the trees for the forest: Nitrogen deposition alters tree growth and survival across the northeastern U.S., responses vary by species. Poster presentation. North American Carbon Program meeting, San Diego, California, February 2009.
156. Thomas, R.Q., C.D. Canham, K.C. Weathers, and C.L. Goodale. Seeing the trees for the forest: Nitrogen deposition alters tree growth and survival across the northeastern U.S., responses vary by species. Poster presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2008.
157. Hurtt, G.C., J. Fisk, R.Q. Thomas, R. Dubayah, P. Moorcroft, and H. Shugart. Linking Models and Data on Vegetation Structure. Oral presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2008.

158. Thomas, R.Q., G.C. Hurtt, and R.O. Dubayah. Lidar and height structured ecosystem models: the importance of spatial scale and height accuracy. Poster presentation. Veg 3D Workshop for DESDynI Planning. University of Virginia, Charlottesville, Virginia, March 2008.
159. Hurtt, G.C., R.Q. Thomas, and R.O. Dubayah. Beyond Potential Vegetation II: Using Repeat Lidar Data on Changes in Vegetation Height to Test Model Predictions of Ecosystem Dynamics. Oral presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2007.
160. Thomas, R. Q., G. H. Hurtt, R. O. Dubayah, K. J. Ranson, S. V. Ollinger, and J. D. Aber. Consequences of fine-scale heterogeneity for predictions of the carbon cycle using lidar data and a height-structured ecosystem model at Hubbard Brook. Oral presentation. Hubbard Brook Experimental Forest Annual Meeting, Woodstock, New Hampshire, July 2007.
161. Thomas, R.Q., G.C. Hurtt, R.O. Dubayah, K.J. Ranson, S.V. Ollinger, and J. D. Aber. The importance of heterogeneity: integrating lidar remote sensing and a height-structured ecosystem model to improve estimates of forest structure and dynamics at Hubbard Brook Experimental Station. Poster presentation. North American Carbon Program meeting, Colorado Springs, Colorado, January 2007.
162. Thomas, R. Q., G.C. Hurtt, R.O. Dubayah, K.J. Ranson, S.V. Ollinger, J.D. Aber. and M. Schliz. Fusing an ecosystem model and lidar remote sensing to study forests with biotic and abiotic heterogeneity. Oral presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2006.
163. Thomas, R.Q., G.C. Hurtt, R.O. Dubayah, K.J. Ranson, S.V. Ollinger, J.D. Aber. The importance of heterogeneity: integrating lidar remote sensing and height-structured ecosystem models to improve estimation forest carbon stocks and fluxes. Poster presentation. International Union of Forest Research Organizations Regional Forest Response to Environmental Change Northeast US Workshop, Cornwall, New York, October 2006.
164. Thomas, R.Q., J.R. Kellner, and D.R. Peart. Potential and limitations of satellite imagery to identify deaths of individual trees in a Central American tropical rain forest. Poster presentation. American Geophysical Union Fall meeting, San Francisco, California, December 2005.
165. Kellner, J.R., R.Q. Thomas, D.R. Peart, M.L. Clark, and D.B. Clark. Small-Footprint LiDAR for Individual-Based Tree Demography in a Lowland Neotropical Rain Forest. Oral presentation. Silviscan: Lidar Applications in Forest Assessment and Inventory, Blacksburg, Virginia, September 2005.

17. PROFESSIONAL MEMBERSHIPS

1. American Association for the Advancement of Science
2. American Geophysical Union
3. Ecological Society of America
4. Ecological Forecasting Initiative