Kathryn Isabel Wheeler

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EDUCATION AND EMPLOYMENT:

Massachusetts Institute of Technology (MIT) Cambridge, MA

- NOAA Climate and Global Change Postdoctoral Fellow September 2022 – present
- Sponsor: Dr. César Terrer

Boston University (BU) Boston, MA

- Ph.D. in Earth and Environment September 2017 – January 2023
- Certificate in Biogeosciences
- Lab Safety Coordinator July 2019 – August 2022
- Dissertation: "Cold-deciduous broadleaf phenology: monitoring using a geostationary satellite and predicting using trigger-less dynamic models," Advisor: Dr. Michael Dietze

University of Delaware (UD) Newark, DE

- Honors B.S. with Distinction in Environmental Science, *summa cum laude* May 2017
- GPA: 3.95/4.0
- Honors Thesis: "Relationship between autumnal changes in leaf light reflectance and differences in nitrogen resorption efficiencies," Advisor: Dr. Delphis Levia

PUBLICATIONS:

1. **K.I. Wheeler,** M.C. Dietze, D. LeBauer, J. Peters, A. Richardson, A. Ross, R.Q. Thomas, K. Zhu, U. Bhat, S. Munch, M. Chen, R. Floreani Buzbee, B. Goldstein, J. Guo, D. Hao, C. Jones, M. Kelly-Fair, H. Liu, C. Malmborg, N. Neupane, D. Pal, V. Shirey, Y. Song, M. Steen, E. Vance, W. Woelmer, J. Wynne, L. Zachmann (2024). "Predicting spring phenology in deciduous broadleaf forests: NEON Phenology Forecasting Community Challenge." *Agricultural and Forest Meteorology* 345: 109810.
2. S. Iida*, **K.I. Wheeler***, K. Nanko, Y. Shinohara, X. Sun, N. Sakai, D.F. Levia (2021). "Canopy structure metrics governing stemflow funneling differs between leafed and leafless states: Insights from a large-scale rainfall simulator". *Hydrological Processes* 35:e14294.
   ***These authors contributed equally to this paper**
3. **K.I. Wheeler**, M.C. Dietze (2021). "Improving the monitoring of deciduous broadleaf phenology using the Geostationary Operational Environmental Satellite (GOES) 16 and 17." *Biogeosciences* 18: 1971-1985.
4. **K.I. Wheeler**, D.F. Levia, R. Vargas (2020). "Visible and near-infrared hyperspectral indices explain more variation in lower-crown leaf nitrogen concentrations in autumn than in summer." *Oecologia*. 192:13-27.
   Award: Highlighted Student Paper

5. **K.I. Wheeler**, M.C. Dietze (2019). "A statistical model for estimating midday NDVI from the Geostationary Operational Environmental Satellite (GOES) 16 and 17." *Remote Sensing* 11(21):2507.
6. **K.I. Wheeler**, D.F. Levia, J.E. Hudson (2017). "Tracking senescence-induced patterns in leaf litter leachate using parallel factor analysis modeling (PARAFAC) and self-organizing maps." *Journal of Geophysical Research- Biogeosciences* 122(9):2233-2250.

7. R.Q. Thomas, 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, and Challenge Contributors[+] (2023). "The NEON Ecological Forecasting Challenge." *Frontiers in Ecology and Evolution* 21(3): 112–113.
   [+]Includes **K.I. Wheeler**
8. B.S. Halpern et al. [including **K.I. Wheeler**] (2023) "Priorities for synthesis in ecology and environmental science." *Ecosphere* 14(1):e4342.
9. W.M. Woelmer, L.M. Bradley, L. Haber, D. Klinges, A.S.L. Lewis, E. Mohr, C.L. Torrens, **K.I. Wheeler**, A.M. Willson (2021). "10 Simple Rules for training yourself in an emerging field" *PLoS Computational Biology* 17(10): e1009440. https://doi.org/10.1371/journal.pcbi.1009440
10. C.R. Rollinson, A. Finley, M.R. Alexander, S. Banerjee, K.-A.D. Hamil, L.E. Koenig, D.H. Locke, M. Peterson, M. Tingley, **K. Wheeler,** C. Youngflesh, E.F. Zipkin. (2021) "Working across space and time: nonstationarity in ecological research and application." *Frontiers in Ecology and the Environment* 19(1): 66-72.
11. M.C. Dietze, C. Averill, J. Foster, **K. Wheeler** (2018). "Ecological Forecasting." *Oxford Bibliographies.* DOI: 10.1093/OBO/9780199830060-0205.
12. J.E. Hudson, D.F. Levia, **K.I. Wheeler**, C.G. Winters, M. Vaughan, J. Chace, R. Sleeper (2018). "American beech leaf-litter leachate chemistry: effects of geography and phenophase." *Journal of Plant Nutrition and Soil Science* 181(2):287-295.

PUBLICATIONS IN REVIEW AND PREPARATION:

- **K.I. Wheeler**, M.C. Dietze (*in review)* "A trigger may not be necessary to cause canopy and leaf senescence in deciduous broadleaf forests". Available at https://www.biorxiv.org/content/10.1101/2023.06.07.544057v1
- **K.I. Wheeler**, M.C. Dietze (*in prep*) "Assessing the role of photosynthesis on leaf senescence in a temperate cold-deciduous forest"

FELLOWSHIPS AND AWARDS:

- NOAA Climate and Global Change Postdoctoral Fellowship — March 2022
- AGU Outstanding Student Presentation Award in Biogeosciences — Dec 2017
- UD American Association of University Professors Outstanding Senior — May 2017
- UD Outstanding Senior in Environmental Science — May 2017

- National Science Foundation Graduate Research Fellowship March 2017
- Boston University Dean's Fellowship Feb 2017
- AGU Outstanding Student Presentation Award in Hydrology Dec 2015
- NOAA Ernest F. Hollings Scholarship (total of $19,000) April 2015
- Eugene G. duPont Distinguished Scholar (full four-year scholarship to UD) April 2012

RESEARCH AND TRAVEL GRANTS:

- Harvard Forest LTER Student Research Award ($2200) May 2021
- BU Biogeoscience Field Work & Travel Grants (Total: $2300) May 2019, April 2021
- BU Graduate Student Organization Travel Grant ($500) April 2019
- UD Undergraduate Research Office Travel & Expense Grants (Total: $1000) Oct 2015, Oct 2016

TEACHING:

- MIT Kaufman Teaching Certificate Program (semester-long course on developing effective teaching strategies and designing a course) Spring 2023
- Guest Lecturer on Photosynthesis for *Introduction to the Terrestrial Carbon Cycle and Ecosystem Ecology* (MIT 1.845) March 2023
- Teaching Fellow and Lab Instructor for *Introduction to Quantitative Environmental Modeling* (BU EE375) Spring 2022
- edX The Inclusive STEM Teaching Project Training (7 weeks of 2–3 hours per week) Fall 2021
- Instructor on Ecological Forecasting Initiative Student Association Annual Meeting Tutorial on Forecast Covariate Data Products June 2021
- Near-term Ecological Forecasting Summer Short Course Teacher Assistant July 2018, July 2019, July 2020, June 2022
    - Lectured on Bayesian Statistics July 2019
    - Lectured on State-Space Models July 2020
- General Computer Science for Engineers Course Teacher Assistant Aug 2016–Dec 2016
- General Computer Science for Engineers Course Lab Assistant Aug 2014–May 2016

MENTORSHIP:

- MIT Research Mentoring Certificate January 2024
- Mentor for undergraduate Jordyn Goldson through MIT miniUROP January 2024
- Mentor for high school student Chloe Zhan through MIT Research Science Institute July 2023
- Mentor for undergraduate Emma Scott through MIT miniUROP January 2023
- Mentor for undergraduate Josiah Shimandle through MIT miniUROP January 2023
- Mentor for undergraduate Victor Feagins through BU Bioinformatics Research and Interdisciplinary Training Experience REU Summer 2021

INVITED TALKS:

1. R.Q. Thomas, F. Olsson, **K. Wheeler**, "The NEON Ecological Forecasting Challenge." National Ecological Observatory Network Seminar, October 2023. **Team seminar**.
2. **K. Wheeler**, K. Zarada, M. Dietze, "Iterative vegetation spring phenology forecasting at a landscape scale." Ecological Society of America, 2019.

SEMINAR AND CONFERENCE PRESENTATIONS:

3. **K. Wheeler**, M. Dietze, "A trigger may not be necessary to cause leaf senescence in deciduous broadleaf forests." Ecological Society of America, 2022. Oral.
4. M. Dietze, **K. Wheeler**, M. Chen, R. Buzbee, B. Goldstein, J. Guo, D. Hao, M. Kelly-Fair, D. LaBauer, H. Liu, C. Jones, C. Malmborg, N. Neupane, D. Pal, A. Richardson, L. Ries, A. Ross, Y. Song, M. Steen, R. Thomas, E. Vance, W. Woelmer, L. Zachmann, K. Zhu, "Multimodel community forecasts of vegetation phenology: Results from year 1 of the NEON Forecasting Challenge." Ecological Society of America, 2022. Oral.
5. **K. Wheeler,** M. Dietze, "Is a trigger necessary to predict senescence in a deciduous canopy?: Considering chlorophyll cycling in phenology process models." American Geophysical Union, 2021. Oral.
6. **K. Wheeler**, C. Jones, M. Dietze, K. Gerst, A. Richardson, B. Seyednasrollah, "Open community forecasts of deciduous forest phenology." Ecological Society of America, 2021, **Invited talk.**
7. **K. Wheeler,** M. Dietze, "Towards improving phenology in carbon models: monitoring using Geostationary Operational Environmental Satellite (GOES)." North American Carbon Program Meeting, 2021. Poster.
8. Q. Thomas, C. Boettiger, C. Carey, M. Dietze, A. Fox, M. Kenney, C. Laney, J. McLachlan, J. Peters, J. Weltzin, W. Woelmer, J. Forest, J. Guinnip, A. Spiers, S. Ryan, **K. Wheeler**, A. Young, L. Johnson, "Introducing the NEON Ecological Forecasting Challenge hosted by the Ecological Forecasting Initiative Research Coordination Network." American Geophysical Union, 2021. Oral.
9. M. Dietze, P. Adler, C. Averill, C. Boettiger, J. Brentrup, J. Bhatnagar, D. Cameron, C. Carey, J. Foster, A. Fox, L. Johnson, M. Kenney, S. LaDeau, C. Laney, M. Lofton, J. McLachlan, J. Peters, W. Pearse, A. Shiklomanov, Q. Thomas, K. Weathers, J. Weltzin, Z. Werbin, **K. Wheeler**, W. Woelmer, K. Zarada, "Improving ecological prediction: The role of cross-network data fusion in iterative ecological forecasting." Ecological Society of America, 2021. Oral.
10. M. Dietze, **K. Wheeler**, C. Averill, J. Bhatnagar, J. Foster, S. LaDeau, K. Weathers, Z. Werbin, K. Zarada. "Linking iterative forecasting to hypothesis testing: a case study for how to do this in practice." Ecological Society of America, 2019. Oral.
11. **K. Wheeler**, M. Dietze. "Improving the Monitoring of Vegetation Phenology Using the New Geostationary Operational Environmental Satellite (GOES-16)." American Geophysical Union, 2018. Oral.

12. M. Dietze, A.R. Desai, H. Dokoohaki, L. Dramko, I. Fer, A. Raiho, S. Serbin, A.N. Shiklomanov, T. Viskari, **K.I. Wheeler**, K. Zarada. "Forecasting forest response in real-time: How close are we and how do we get there?" American Geophysical Union, 2018. Oral.
13. M. Dietze, A.R. Desai, H. Dokoohaki, I. Fer, A. Raiho, S. Serbin, A.N. Shiklomanov, T. Viskari, **K.I. Wheeler**. "Forecasting forest responses to climate variability in real-time: How close are we and how do we get there?" Ecological Society of America Annual Meeting, 2018. Oral.
14. **K. Wheeler**, D. Levia, J. Hudson. "Using Parallel Factor Analysis Modeling (PARAFAC) and Self-Organizing Maps to Track Senescence-Induced Patterns in Leaf Litter Leachate." American Geophysical Union, 2017. Poster.
    Award: Outstanding Student Paper Award in Biogeosciences
15. J.E. Hudson, D.F. Levia, **K.I. Wheeler**, C.G. Winters, M.C.H. Vaughan, J. Chace, R. Sleeper. "American Beech Leaf-litter Leachate Chemistry: Effects of Geography and Phenophase." American Geophysical Union, 2017. Poster
16. **K. Wheeler**, D. Levia, R. Vargas. "Changes in Autumnal Leaf Reflectance Measurements of Deciduous Trees in Relation to Nitrogen Resorption Efficiencies." American Geophysical Union, 2016. Poster.
17. **K. Wheeler,** J. Hudson, D. Levia, C. Winters, S. Inamdar, M. Vaughan & J. Chace. "Leaf Leachate Chemistry: Regional Variation Across Three Watersheds in the Northeastern United States." American Geophysical Union, 2015. Poster.
    Award: Outstanding Student Paper Award in Hydrology

PROFESSIONAL DEVELOPMENT AND TRAINING:

- Spectral ecology and leadership short course (www.specschool.org) June 2023
- NCAR-NEON Workshop May 2023
- NIMBLE Workshop June 2020
- National Outdoor Leadership School in Scandinavia Aug 2017
- University of Colorado Mountain Research Station Fluxcourse July 2017
- GREEN Program in Renewable Energy and Sustainability at Reykjavik University Aug 2016
- National Security Language Initiative for Youth (U.S. Department of State language immersion scholarship) in Beijing, China 2012–2013
- North Carolina School of Science and Mathematics (Highly selective public residential high school specializing in STEM; Durham, NC) 2010–2012

COMPUTER EXPERIENCE: R, Python, MATLAB, Java, C++, and ArcGIS

JOURNAL PEER-REVIEWER: *Remote Sensing* (3), *Remote Sensing of Environment* (2), *Plant Nutrition and Soil Science* (2), *International Journal of Remote Sensing* (1), *Agriculture and Forest Meteorology* (2), *Biogeosciences* (1), *Journal of Ecology* (1), *Journal of Geophysical Research: Biogeosciences* (1), *Oecologia* (1), *Ecology Letters* (2), *New Phytologist* (1)

SERVICE AND COMMUNITY ENVOLVEMENT:

- Reviewer of Applications for Spectral Ecology Summer School January 2024
- Co-convener, Poster Section Chair, and Outstanding Student Presentation Award Liaison at American Geophysical Union Annual Meeting 2023
- Member of Focus Group to use Design Justice Principles to Improve Ecological Forecasting Challenge 2023
- Individual Grant Proposal Reviewer for National Science Foundation 2023
- Co-convener AGU session on phenology 2023
- Leader of Ecological Forecasting Initiative's Phenology Forecast Challenge 2020–2021
- Down to Earth Food Cooperative 501(c)(3) Board Member & Finance Director 2016–2017
- Linden Hill Elementary School Computer Science Class Teacher Assistant Spring 2016
- Newark Charter Elementary School Computer Science Club Instructor Spring 2016
- Girl Scout Gold Award (project focused on water quality education) August 2012

PROFESSIONAL MEMBERSHIPS:

- American Geophysical Union
- Ecological Society of America
- Ecological Forecasting Initiative