

Kai Zhu, PhD

Associate Professor, University of Michigan

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Appointments

- 2022– Associate Professor
University of Michigan, School for Environment and Sustainability
University of Michigan, Institute for Global Change Biology
- 2023– Associate Professor
University of Michigan, Department of Ecology and Evolutionary Biology
- 2022– Affiliated Faculty
University of Michigan, Michigan Institute for Data Science
- 2023– Affiliated Faculty
University of Michigan, Michigan Center for Applied and Interdisciplinary Mathematics
University of Michigan, Michigan Institute for Computational Discovery and Engineering
- 2021–2022 Associate Professor
- 2017–2021 Assistant Professor
University of California, Santa Cruz, Department of Environmental Studies
- 2019–2022 Affiliated Faculty
University of California, Santa Cruz, Graduate Program in Coastal Science and Policy
- 2017 Assistant Professor
University of Texas, Arlington, Department of Biology
- 2016 Julian Huxley Faculty Fellow (Principal Investigator)
Rice University, Department of BioSciences
- 2015 Barbara McClintock Postdoctoral Fellow
- 2014 Postdoctoral Research Scientist
Carnegie Institution for Science, Department of Global Ecology
Stanford University, Department of Biology
Advisors: Christopher B. Field, Nona R. Chiariello, Tadashi Fukami

Education

- 2009–2014 PhD in Environment (Ecology)
Duke University, Nicholas School of the Environment
Committee: James S. Clark (chair), John W. Terborgh, Wenhong Li, Alan E. Gelfand
Dissertation: *Climate Change and Forest Biodiversity in the Eastern United States*
- 2012–2014 MS in Statistical Science
Duke University, Department of Statistical Science
Committee: Alan E. Gelfand (chair), Merlise A. Clyde, James S. Clark
Dissertation: *Integral Projection Models*
- 2013–2014 CERTIFICATE in College Teaching
Duke University, Graduate School
- 2006–2009 MS in Natural Resources (Ecology)
Beijing Normal University, Institute of Resources Science
Advisor: Qiong Gao
Dissertation: *Ecosystem Services and Ecohydrology in the Yellow River Basin, China*
- 2002–2006 BS in Management Sciences (Systems Theory)
Beijing Normal University, Department of Systems Sciences

Awards & Honors

- 2021 CAREER Award
National Science Foundation
- 2021–2026 Early Career Fellow
Ecological Society of America
- 2019 Tansley Medal for Excellence in Plant Science
New Phytologist Foundation
- 2018 UC Santa Cruz Nominee
Packard Fellowships for Science and Engineering
- 2017 Sino-Eco Best Young Investigator Paper Award
Ecological Society of America, Sino-Ecologists Association Overseas
- 2016–2018 Julian Huxley Faculty Fellowship
Rice University
- 2015 Barbara McClintock Fellowship
Carnegie Institution for Science
- 2012 Outstanding Student in Ecology Award
Ecological Society of America, Student Section
- 2012 Dean's Award for Outstanding PhD Student Manuscript
Duke University, Nicholas School of the Environment

2012 Must Read Article Award
Faculty of 1000

Grants

EXTERNAL FUNDING

- 2021–2026 Faculty Early Career Development Program (CAREER) Grant
Principal Investigator
National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology
- 2020–2022 Microsoft AI for Earth Grant
Principal Investigator, with Stephan B. Munch
Microsoft Corporation
- 2019–2022 Macrosystems Biology and NEON-Enabled Science Grant
Principal Investigator, with Kabir G. Peay
National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology
- 2013–2014 Doctoral Dissertation Improvement Grant
Co-Principal Investigator, with James S. Clark
National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology

INTERNAL FUNDING

- 2023–2024 Propelling Original Data Science Grant
Principal Investigator, with Kerby Shedden
University of Michigan, Michigan Institute for Data Science
- 2023–2026 Working Group Grant
Principal Investigator, with Donald R. Zak and Peter B. Reich
University of Michigan, Institute for Global Change Biology
- 2022–2023 Faculty Research Grant
Principal Investigator
University of California, Santa Cruz, Committee on Research
- 2022–2023 Seed Funding for Early Stage Initiatives
Co-Principal Investigator, with Joshua Harrison and Katia Obraczka
University of California, Santa Cruz, Office of Research
- 2021–2022 CITRIS Campus Seed Fund
Co-Principal Investigator, with Katia Obraczka and Ricardo Sanfelice
University of California, Center for Information Technology Research in the Interest of Society (CITRIS)

- 2021–2022 Collaborative Research Grant
Co-Principal Investigator, with Yu Zhang
University of California, Santa Cruz, Committee on Research
- 2021 Tech for Social Good Grant
Principal Investigator
University of California, Center for Information Technology Research in the Interest of Society (CITRIS)
- 2020 Building Belonging Grant
Principal Investigator
University of California, Santa Cruz, Institute for Social Transformation
- 2020–2021 Faculty Research Grant
Principal Investigator
University of California, Santa Cruz, Committee on Research
- 2020 Building Belonging Grant
Principal Investigator
University of California, Santa Cruz, Institute for Social Transformation
- 2019–2020 Faculty Research Grant
Principal Investigator
University of California, Santa Cruz, Committee on Research
- 2017–2018 New Faculty Research Grant
Principal Investigator
University of California, Santa Cruz, Committee on Research
- 2015–2016 Innovation Seed Grant
Co-Principal Investigator, with Zhiyuan Song
Stanford University, Center for Innovation in Global Health

Publications

Google Scholar citations: 3892, h-index: 30, i10-index: 50.

Mentee authors underlined.

In press

85. Zhu K, Song Y (in press), Harnessing herbaria to advance plant phenology research under global change. *New Phytologist*. <https://doi.org/10.1111/nph.19088>
84. Jin Y, Hu S, Ziegler AD, Gibson L, Campbell JE, Xu R, Chen D, Zhu K, Zheng Y, Ye B, Ye F, Zeng Z (in press), Energy production and water savings from floating solar photovoltaics on global reservoirs. *Nature Sustainability*. <https://doi.org/10.1038/s41893-023-01089-6>
83. He X, Jiang X, Spracklen D, Holden J, Liang E, Liu H, Xu C, Du J, Zhu K, Elsen P, Zeng Z

(in press), Global distribution and climatic controls of natural mountain treelines. *Global Change Biology*.

82. Crimmins TM, Vogt E, Brown CL, Dalan D, Manangan A, Robinson G, Song Y, **Zhu K**, Katz DSW (in press), Volunteer-contributed observations of flowering often correlate with airborne pollen concentrations. *International Journal of Biometeorology*.

2023

81. Thomas RQ, Boettiger C, Carey CC, Dietze MC, Johnson LR, Kenney MA, McLachlan JS, Peters JA, Sokol ER, Weltzin JF, Willson A, Woelmer WM, Challenge contributors (including Song Y, **Zhu K**) (2023), The NEON Ecological Forecasting Challenge. *Frontiers in Ecology and the Environment*, 21, 112–113. <https://doi.org/10.1002/fee.2616>

80. Song Y, Munch SB, **Zhu K** (2023), Prediction-based approach for quantifying phenological mismatch across landscapes under climate change. *Landscape Ecology*, 38, 821–845. <https://doi.org/10.1007/s10980-023-01595-0>

79. Qin C, Pellitier P, Van Nuland M, Peay KP, **Zhu K** (2023), Niche modeling predicts that soil fungi occupy a precarious climate in boreal forests. *Global Ecology and Biogeography*, 32, 1127–1139. <https://doi.org/10.1111/geb.13684>

78. Kulikowski AJ, Zahawi RA, Werden LK, **Zhu K**, Holl KD (2023), Restoration interventions mediate tropical tree recruitment dynamics over time. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 378, 20210077. <https://doi.org/10.1098/rstb.2021.0077>

77. Bogdziewicz M, Acuña M-CA, Andrus R, Ascoli D, Bergeron Y, Brveiller D, Boivin T, Bonal R, Caignard T, Cailleret M, Calama R, Calderon SD, Camarero JJ, Chang-Yang C-H, Chave J, Chianucci F, Cleavitt NL, Courbaud B, Cutini A, Curt T, Das AJ, Davi H, Delpierre N, Delzon S, Dietze M, Dormont L, Farfan-Rios W, Gehring CA, Gilbert GS, Gratzer G, Greenberg CH, Guignabert A, Guo Q, Hackett-Pain A, Hampe A, Han Q, Hoshizaki K, Ibanez I, Johnstone JF, Journé V, Kitzberger T, Knops JMH, Kunstler G, Kobe R, Lageard JGA, LaMontagne JM, Ledwon M, Leininger T, Limousin J-M, Lutz JA, Macias D, Marell A, McIntire EJB, Moran E, Motta R, Myers JA, Nagel TA, Naoe S, Noguchi M, Oguro M, Kurokawa H, Ourcival J-M, Parmenter R, Perez-Ramos IM, Piechnik L, Podgórski T, Poulsen J, Qiu T, Redmond MD, Reid CD, Rodman KC, Šamonil P, Holik J, Scher CL, Van Marle HS, Seget B, Shibata M, Sharma S, Silman M, Steele MA, Straub JN, Sun I-F, Sutton S, Swenson JJ, Thomas PA, Uriarte M, Vacchiano G, Veblen TT, Wright B, Wright SJ, Whitham TG, **Zhu K**, Zimmerman JK, Zywiec M, Clark JS (2023), Linking seed size and number to trait syndromes in trees. *Global Ecology and Biogeography*, 32, 683–694. <https://doi.org/10.1111/geb.13652>

2022

76. Xu Z, Johnson DJ, **Zhu K**, Lin F, Ye J, Yuan Z, Mao Z, Fang S, Hao Z, Wang X (2022), Interannual climate variability has predominant effects on seedling survival in a temperate forest. *Ecology*, e3643. <https://doi.org/10.1002/ecy.3643>.

75. Qiu T, Andrus R, Aravena M-C, Ascoli D, Bergeron Y, Berretti R, Berveiller D, Bogdziewicz

- M, Boivin T, Bonal R, Bragg DC, Caignard T, Calama R, Camarero JJ, Chang-Yang C-H, Cleavitt NL, Courbaud B, Courbet F, Curt T, Das AJ, Daskalakou E, Davi H, Delpierre N, Delzon S, Dietze M, Calderon SD, Dormont L, Espelta J, Fahey TJ, Farfan-Rios W, Gehring CA, Gilbert GS, Gratzer G, Greenberg CH, Guo Q, Hacket-Pain A, Hampe A, Han Q, Hille Ris Lambers J, Hoshizaki K, Ibanez I, Johnstone JF, Journé V, Kabeya D, Kilner CL, Kitzberger T, Knops JMH, Kobe RK, Kunstler G, Lageard JGA, LaMontagne JM, Ledwon M, Lefevre F, Leininger T, Limousin J-M, Lutz JA, Macias D, McIntire EJB, Moore CM, Moran E, Motta R, Myers JA, Nagel TA, Noguchi K, Ourcival J-M, Parmenter R, Pearse IS, Perez-Ramos IM, Piechnik L, Poulsen J, Poulton-Kamakura R, Redmond MD, Reid CD, Rodman KC, Rodriguez-Sanchez F, Sanguinetti JD, Scher CL, Schlesinger WH, Schmidt Van Marle H, Seget B, Sharma S, Silman M, Steele MA, Stephenson NL, Straub JN, Sun I-F, Sutton S, Swenson JJ, Swift M, Thomas PA, Uriarte M, Vacchiano G, Veblen TT, Whipple AV, Whitham TG, Wion AP, Wright B, Wright SJ, **Zhu K**, Zimmerman JK, Zlotin R, Zywiec M, Clark JS (2022), Limits to reproduction and seed size-number trade-offs that shape forest dominance and future recovery. *Nature Communications*, 13, 2381. <https://doi.org/10.1038/s41467-022-30037-9>
74. Maschler J, Bialic-Murphy L, Wan J, Andresen LC, Zohner CM, Reich PB, Lüscher A, Schneider MK, Müller C, Moser G, Dukes JS, Schmidt IK, Bilton M, **Zhu K**, Crowther TW (2022), Links across ecological scales: Plant biomass responses to elevated CO₂. *Global Change Biology*, 28, 6115-6134. <http://doi.org/10.1111/gcb.16351>
73. Katz D, Vogt E, Manangan A, Brown CL, Dalan D, **Zhu K**, Song Y, Crimmins TM (2022), Observations from the USA National Phenology Network can be leveraged to model airborne pollen. *Aerobiologia*. <https://doi.org/10.1007/s10453-022-09774-3>
72. Jung CG, Xu X, Shi Z, Niu S, Xia J, Sherry R, Jiang L, **Zhu K**, Hou E, Luo Y (2022), Warmer and wetter climate promotes net primary production in C₄ grassland with additional enhancement by hay-harvesting. *Ecosphere*, 13(1):e3899. <https://doi.org/10.1002/ecs2.3899>
71. Journé V, Andrus R, Aravena M-C, Ascoli D, Berretti R, Berveiller D, Bogdziewicz M, Boivin T, Bonal R, Caignard T, Calama R, Camarero JJ, Chang-Yang C-H, Courbaud B, Courbet F, Curt T, Das AJ, Daskalakou E, Davi H, Delpierre N, Delzon S, Dietze M, Donoso Calderon S, Dormont L, Maria Espelta J, Fahey TJ, Farfan-Rios W, Gehring CA, Gilbert GS, Gratzer G, Greenberg CH, Guo Q, Hacket-Pain A, Hampe A, Han Q, Lambers JHR, Hoshizaki K, Ibanez I, Johnstone JF, Kabeya D, Kays R, Kitzberger T, Knops JMH, Kobe RK, Kunstler G, Lageard JGA, LaMontagne JM, Leininger T, Limousin J-M, Lutz JA, Macias D, McIntire EJB, Moore CM, Moran E, Motta R, Myers JA, Nagel TA, Noguchi K, Ourcival J-M, Parmenter R, Pearse IS, Perez-Ramos IM, Piechnik L, Poulsen J, Poulton-Kamakura R, Qiu T, Redmond MD, Reid CD, Rodman KC, Rodriguez-Sanchez F, Sanguinetti JD, Scher CL, Marle HSV, Seget B, Sharma S, Silman M, Steele MA, Stephenson NL, Straub JN, Swenson JJ, Swift M, Thomas PA, Uriarte M, Vacchiano G, Veblen TT, Whipple AV, Whitham TG, Wright B, Wright SJ, **Zhu K**, Zimmerman JK, Zlotin R, Zywiec M, Clark JS (2022), Globally, tree fecundity exceeds productivity gradients. *Ecology Letters*, 25(6):1471–1482. <https://doi.org/10.1111/ele.14012>

70. Donnelly A, Yu R, Jones K, Belitz M, Li B, Duffy K, Zhang X, Wang J, Seyednasrollah B, Gerst K, Li D, Kaddoura Y, **Zhu K**, Morissette J, Ramey C, Smith K (2022), Exploring discrepancies between in situ phenology and remotely derived phenometrics at NEON sites. *Ecosphere*, 13(1): e3912. <https://doi.org/10.1002/ecs2.3912>
69. Zhong Y, Chu C, Myers JA, Gilbert GS, Lutz JA, Stillhard J, **Zhu K**, Thompson J, Baltzer JL, He F, LaManna JA, Davies SJ, Aderson-Teixeira KJ, Burslem DFRP, Alonso A, Chao K-J, Wang X, Gao L, Orwig DA, Yin X, Sui X, Su Z, Abiem I, Bissiengou P, Bourg N, Butt N, Cao M, Chang-Yang C-H, Chao W-C, Chapman H, Chen Y-Y, Coomes DA, Cordell S, Oliveira AA de, Du H, Fang S, Giardina CP, Hao Z, Hector A, Hubbell SP, Janík D, Jansen PA, Jiang M, Jin G, Kenfack D, Král K, Larson AJ, Li B, Li X, Li Y, Lian J, Lin L, Liu F, Liu Y, Liu Y, Luan F, Luo Y, Ma K, Malhi Y, McMahon SM, McShea W, Memiaghe H, Mi X, Morecroft M, Novotny V, O'Brien MJ, Ouden J den, Parker GG, Qiao X, Ren H, Reynolds G, Samonil P, Sang W, Shen G, Shen Z, Song G-ZM, Sun I-F, Tang H, Tian S, Uowolo AL, Uriarte M, Wang B, Wang X, Wang Y, Weiblen GD, Wu Z, Xi N, Xiang W, Xu H, Xu K, Ye W, Yu M, Zeng F, Zhang M, Zhang Y, Zhu L, Zimmerman JK (2021), Arbuscular mycorrhizal trees influence the latitudinal beta-diversity gradient of tree communities in forests worldwide. *Nature Communications*, 12(1):3137. <https://doi.org/10.1038/s41467-021-23236-3>
68. Yang X, **Zhu K**, Loik ME, Sun W (2021), Differential responses of soil bacteria and fungi to altered precipitation in a meadow steppe. *Geoderma*, 384, 114812. <https://doi.org/10.1016/j.geoderma.2020.114812>
67. Wang F, Sanders CJ, Santos IR, Tang J, Schurech M, Kirwan ML, Kopp RE, **Zhu K**, Li X, Yuan J, Liu W, Li Z (2021), Global blue carbon accumulation in tidal wetlands increases with climate change. *National Science Review*, 8, nwaa296. <https://doi.org/10.1093/nsr/nwaa296>
66. Song Y, Zajic CJ, Hwang H, Hakkenberg CR, **Zhu K** (2021), Widespread mismatch between phenology and climate in human-dominated landscapes. *AGU Advances*, 2(4): e2021AV000431. <https://doi.org/10.1029/2021AV000431>
65. Reimer JR, Arroyo-Esquivel J, Jiang J, Scharf HR, Wolkovich EM, **Zhu K**, Boettiger C (2021), Noise can create or erase long transient dynamics. *Theoretical Ecology*, 14:685–95. <https://doi.org/10.1007/s12080-021-00518-6>
- Honorable Mention of 2022 Outstanding Paper Award, Theoretical Ecology Section, Ecological Society of America.
64. Qiu T, Aravena M-C, Andrus R, Ascoli D, Bergeron Y, Berretti R, Bogdziewicz M, Boivin T, Bonal R, Caignard T, Calama R, Camarero JJ, Clark CJ, Courbaud B, Delzon S, Calderon SD, Farfan-Rios W, Gehring CA, Gilbert GS, Greenberg CH, Guo Q, Lambers JHR, Hoshizaki K, Ibanez I, Journé V, Kilner CL, Kobe RK, Koenig WD, Kunstler G, LaMontagne JM, Ledwon M, Lutz JA, Motta R, Myers JA, Nagel TA, Nuñez CL, Pearse IS, Piechnik Ł, Poulsen JR, Poulton-Kamakura R, Redmond MD, Reid CD, Rodman KC, Scher CL, Marle HSV, Seget B, Sharma S, Silman M, Swenson JJ, Swift M, Uriarte M, Vacchiano G, Veblen TT, Whipple AV, Whitham TG, Wion AP, Wright SJ, **Zhu K**, Zimmerman JK, Żywiec M, Clark JS (2021),

- Is there tree senescence? The fecundity evidence. *Proceedings of the National Academy of Sciences*, 118(34):e2106130118. <https://doi.org/10.1073/pnas.2106130118>
63. [Qin C](#), Bartelme R, Chung YA, Fairbanks D, Lin Y, Liptzin D, Muscarella C, Naithani K, Peay K, Pellitier P, St. Rose A, Stanish L, Werbin Z, **Zhu K** (2021), From DNA sequences to microbial ecology: Wrangling NEON soil microbe data with the neonMicrobe R package. *Ecosphere*, 12(11):e03842. <https://doi.org/10.1002/ecs2.3842>
 62. Nagy RC, Balch JK, Bissell EK, Cattau ME, Glenn NF, Halpern BS, Ilangakoon N, Johnson B, Joseph MB, Marconi S, O’Riordan C, Sanovia J, Swetnam TL, Travis WR, Wasser LA, Woolner E, Zarnetske P, Abdulrahim M, Adler J, Barnes G, Bartowitz KJ, Blake RE, Bombaci SP, Brun J, Buchanan JD, Chadwick KD, Chapman MS, Chong SS, Chung YA, Corman JR, Couret J, Crispo E, Doak TG, Donnelly A, Duffy KA, Dunning KH, Duran SM, Edmonds JW, Fairbanks DE, Felton AJ, Florian CR, Gann D, Gebhardt M, Gill NS, Gram WK, Guo JS, Harvey BJ, Hayes KR, Helmus MR, Hensley RT, Hondula KL, Huang T, Hundertmark WJ, Iglesias V, Jacinthe P-A, Jansen LS, Jarzyna MA, Johnson TM, Jones KD, Jones MA, Just MG, Kaddoura YO, Kagawa-Vivani AK, Kaushik A, Keller AB, King KBS, Kitzes J, Koontz MJ, Kouba PV, Kwan W-Y, LaMontagne JM, LaRue EA, Li D, Li B, Lin Y, Liptzin D, Long WA, Mahood AL, Malloy SS, Malone SL, McGlinchy JM, Meier CL, Melbourne BA, Mietkiewicz N, Morisette JT, Moustapha M, Muscarella C, Musinsky J, Muthukrishnan R, Naithani K, Neely M, Norman K, Parker SM, Perez Rocha M, Petri L, Ramey CA, Record S, Rossi MW, SanClements M, Scholl VM, Schweiger AK, Seyednasrollah B, Sihi D, Smith KR, Sokol ER, Spaulding SA, Spiers AI, St Denis LA, Staccone AP, Stack Whitney K, Stanitski DM, Stricker E, Surasinghe TD, Thomsen SK, Vasek PM, Xiaolu L, Yang D, Yu R, Yule KM, **Zhu K** (2021), Harnessing the NEON data revolution to advance open environmental science with a diverse and data-capable community. *Ecosphere*, 12(12), e03833. <https://doi.org/10.1002/ecs2.3833>
 61. [Liu L](#), **Zhu K**, Krause SMB, Li S, Wang X, Zhang Z, Shen M, Yang Q, Lian J, Wang X, Ye W, Zhang J (2021), Changes in assembly processes of soil microbial communities during secondary succession in two subtropical forests. *Soil Biology and Biochemistry*, 154, 108144. <https://doi.org/10.1016/j.soilbio.2021.108144>
 60. Jones J, Groffman PM, Blair J, Davis FW, Dugan H, Euskirchen ES, Frey SD, Harms T, Hinckley E, Kosmala M, Loberg S, Malone S, Novick K, Record S, Rocha AV, Ruddell B, Stanley EH, Sturtevant C, Thorpe A, White T, Wieder WR, Zhai L, **Zhu K** (2021), Synergies among environmental science research and monitoring networks: A research agenda. *Earth’s Future*, 9, e2020EF001631. <https://doi.org/10.1029/2020EF001631>
 59. Freeman BG, [Song Y](#), Feeley KJ, **Zhu K** (2021), Montane species track rising temperatures better in the tropics than in the temperate zone. *Ecology Letters*, 24, 1697-1708. <https://doi.org/10.1111/ele.13762>
 58. Clark JS, Andrus R, Aubry-Kientz M, Bergeron Y, Bogdziewicz M, Bragg DC, Brockway D, Cleavitt NL, Cohen S, Courbaud B, Daley R, Das AJ, Dietze M, Fahey TJ, Fer I, Franklin JF, Gehring CA, Gilbert GS, Greenberg CH, Guo Q, Hille Ris Lambers J, Ibanez I, Johnstone J, Kilner CL, Knops J, Koenig WD, Kunstler G, LaMontagne JM, Legg KL, Luongo J, Lutz JA,

Macias D, McIntire EJ, Messaoud Y, Moore CM, Moran E, Myers JA, Myers OB, Nunez C, Parmenter R, Pearson S, Poulton-Kamakura R, Ready E, Redmond MD, Reid CD, Rodman KC, Scher CL, Schlesinger WH, Schwantes AM, Shanahan E, Sharma S, Steele M, Stephenson NL, Sutton S, Swenson JJ, Swift M, Veblen TT, Whipple AV, Whitham TG, Wion AP, **Zhu K**, Zlotin R (2021), Continent-wide tree fecundity driven by indirect climate effects. *Nature Communications*, 12, 1242. <https://doi.org/10.1038/s41467-020-20836-3>.

57. Chowdhury S, **Zhu K**, Zhang Y (2021), Mitigating greenhouse gas emissions through generative adversarial networks based wildfire prediction. In: *Energy Proceedings*, Vol. 15, MIT A+B Applied Energy Symposium, Cambridge, Massachusetts, USA.

2020

56. **Zhu K** (2020), Understanding forest dynamics by integrating age and environmental change. *New Phytologist*, 228, 1728-1733. <https://doi.org/10.1111/nph.16412>

- Invited Tansley insight review.
- Awarded New Phytologist Tansley Medal for Excellence in Plant Science. <https://doi.org/10.1111/nph.17028>
- Featured in New Phytologist profile. <https://doi.org/10.1111/nph.17026>

55. Wang C, Guan K, Peng B, Chen M, Jiang C, Zeng Y, Wu G, Wang S, Wu J, Yang X, Frankenberg C, Kohler P, Berry J, Bernacchi C, **Zhu K**, Alden C, Miao G (2020), Satellite footprint data from OCO-2 and TROPOMI reveal significant spatio-temporal and inter-vegetation type variabilities of solar-induced fluorescence yield in the U.S. Midwest. *Remote Sensing of Environment*, 241, 111728. <https://doi.org/10.1016/j.rse.2020.111728>

54. Steidinger BS, Bhatnagar JM, Vilgalys R, Taylor JW, Qin C, **Zhu K**, Bruns TD, Peay KG (2020), Ectomycorrhizal fungal diversity predicted to substantially decline due to climate changes in North American Pinaceae forests. *Journal of Biogeography*, 47, 772-782. <https://doi.org/10.1111/jbi.13802>

53. Qin C, **Zhu K**, Chiariello NR, Field CB, Peay KG (2020), Fire history and plant community composition outweigh decadal multi-factor global change as drivers of microbial composition in an annual grassland. *Journal of Ecology*, 108, 611-625. <https://doi.org/10.1111/1365-2745.13284>

- Cover Story and Editor's Choice: *Issue 108 Volume 2 of Journal of Ecology*.

52. Moore JR, Argles APK, **Zhu K**, Huntingford C, Cox PM (2020), Validation of demographic equilibrium theory against tree-size distributions and biomass density in Amazonia. *Biogeosciences*, 17, 1013-1032. <https://doi.org/10.5194/bg-17-1013-2020>

51. Liu L, **Zhu K**, Wurzbürger N, Zhang J (2020), Relationships between plant diversity and soil microbial diversity vary across taxonomic groups and spatial scales. *Ecosphere*, 11(1):e02999. <https://doi.org/10.1002/ecs2.2999>

50. Laubmeier AN, Cazelles B, Cuddington K, Erickson KD, Fortin MJ, Ogle K, Winkle CK, **Zhu K**, Zipkin E (2020), Ecological dynamics: integrating empirical, statistical, and analytical

methods. *Trends in Ecology and Evolution*, 35, 1090–1099. <https://doi.org/10.1016/j.tree.2020.08.006>

49. Lamperty T, **Zhu K**, Poulsen JR, Dunham AE (2020), Defaunation of large mammals alters understory vegetation and functional importance of invertebrates in an Afrotropical forest. *Biological Conservation*, 241, 108329. <https://doi.org/10.1016/j.biocon.2019.108329>
 - Featured in *Scientific American*, *Cosmos Magazine*, *Environmental News Network*, *Rice University News*, and *Futurity*.
48. Jiang F, **Zhu K**, Cadotte MW, Jin G (2020), Tree mycorrhizal type mediates the strength of negative density dependence in temperate forests. *Journal of Ecology*, 108, 2601–2610. <https://doi.org/10.1111/1365-2745.13413>
47. He Y, Cheng W, Zhou L, Shao J, Liu H, Zhou H, **Zhu K**, Zhou X (2020), Soil DOC release and aggregate disruption mediate rhizosphere priming effect on soil C decomposition. *Soil Biology and Biochemistry*, 144, 107787. <https://doi.org/10.1016/j.soilbio.2020.107787>
46. Hakkenberg C, Peet RK, Wentworth TR, **Zhu K**, Schafale MP (2020), Tree canopy cover constrains the fertility–diversity relationship in plant communities of the southeastern United States. *Ecology*, 101(10):e03119. <https://doi.org/10.1002/ecy.3119>
45. Egerer MH, Wagner B, Lin BB, Kendal D, **Zhu K** (2020), New methods of spatial analysis in urban gardens inform future vegetation surveying. *Landscape Ecology*, 35, 761–778. <https://doi.org/10.1007/s10980-020-00974-1>
44. Compagnoni A, Bibian AJ, Ochocki BM, Levin S, **Zhu K**, Miller TEX (2020), popler: An R package for extraction and synthesis of population time series from the long-term ecological research (LTER) network. *Methods in Ecology and Evolution*, 11, 258–264. <https://doi.org/10.1111/2041-210X.13319>
43. **Zhu K**, Song Y, Qin C (2019), Forest age improves understanding of the global carbon sink. *Proceedings of the National Academy of Sciences*, 116, 3962–3964. <https://doi.org/10.1073/pnas.1900797116>
42. Yu K, Smith WK, Trugman AT, Condit R, Hubbell SP, Sardans J, Peng C, **Zhu K**, Peñuelas J, Cailleret M, Levanic T, Gessler A, Schaub M, Ferretti M, Anderegg WRL (2019), Pervasive decreases in living vegetation carbon turnover time across forest climate zones. *Proceedings of the National Academy of Sciences*, 116, 24662–24667. <https://doi.org/10.1073/pnas.1821387116>
41. Wang C, **Zhu K** (2019), Misestimation of growing season length due to inaccurate construction of satellite vegetation index time series. *IEEE Geoscience and Remote Sensing Letters*, 16, 1185–1189. <https://doi.org/10.1109/lgrs.2019.2895805>

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40. Terborgh J, **Zhu K**, Álvarez-Loayza P, Cornejo-Valverde F (2019), Seed limitation in an Amazonian floodplain forest. *Ecology*, 100(5):e02642. <http://doi.org/10.1002/ecy.2642>
39. Quan Q, Tian D, Luo Y, Zhang F, Crowther TW, **Zhu K**, Chen HYH, Zhou Q, Niu S (2019), Water scaling of ecosystem carbon cycle feedback to climate warming. *Science Advances*, 5:eaav1131. <https://doi.org/10.1126/sciadv.aav1131>
- Selected in Special Collection on Transformation of Climate and Biodiversity for scientists and policymakers at the United Nations XXV Conference of the Parties (COP25), December 2019.
38. Mao ZK, Corrales A, **Zhu K**, Yuan ZQ, Lin F, Ye J, Hao ZQ, Wang XG (2019), Tree mycorrhizal associations mediate soil fertility effects on forest community structure in a temperate forest. *New Phytologist*, 223, 475-486. <https://doi.org/10.1111/nph.15742>
37. He Y, Zhou X, Cheng W, Zhou L, Zhang G, Zhou G, Liu R, Shao J, **Zhu K**, Cheng W (2019), Linking improvement of soil structure to soil carbon storage following invasion by a C₄ plant *Spartina alterniflora*. *Ecosystems*, 22, 859-872. <https://doi.org/10.1007/s10021-018-0308-3>
36. Chu C, Lutz JA, Král K, Vrška T, Yin X, Myers JA, Abiem I, Alonso A, Bourg N, Burslem DFRP, Cao M, Chapman H, Condit R, Fang S, Fischer GA, Gao L, Hao Z, Hau BCH, He Q, Hector A, Hubbell SP, Jiang M, Jin G, Kenfack D, Lai J, Li B, Li X, Li Y, Lian J, Lin L, Liu Y, Liu Y, Luo Y, Ma K, McShea W, Memiaghe H, Mi X, Ni M, O'Brien MJ, Oliveira AA de, Orwig DA, Parker GG, Qiao X, Ren H, Reynolds G, Sang W, Shen G, Su Z, Sui X, Sun I-F, Tian S, Wang B, Wang X, Wang X, Wang Y, Weiblen GD, Wen S, Xi N, Xiang W, Xu H, Xu K, Ye W, Zhang B, Zhang J, Zhang X, Zhang Y, **Zhu K**, Zimmerman J, Storch D, Baltzer JL, Anderson-Teixeira KJ, Mittelbach GG, He F (2019), Direct and indirect effects of climate on richness drive the latitudinal diversity gradient in forest trees. *Ecology Letters*, 22, 245-255. <https://doi.org/10.1111/ele.13175>
- 2018
35. **Zhu K**, Zhang J, Niu S, Chu C, Luo Y (2018), Limits to growth of forest biomass carbon sink under climate change. *Nature Communications*, 9(1), 2709. <https://doi.org/10.1038/s41467-018-05132-5>
- Featured by [United Press International \(UPI\)](#), [American Association for the Advancement of Science \(AAAS\) EurekaAlert!](#), and [University of California, Santa Cruz](#).
34. **Zhu K**, McCormack ML, Lankau RA, Egan JF, Wurzburger N (2018), Association of ectomycorrhizal trees with high carbon-to-nitrogen ratio soils across temperate forests is driven by smaller nitrogen not larger carbon stocks. *Journal of Ecology*, 106, 524-535. <https://doi.org/10.1111/1365-2745.12918>
- Featured by [University of California, Santa Cruz](#).
33. Wang C, Chen J, Tang Y, Black A, **Zhu K** (2018), A novel method for removing snow melting-induced fluctuation in GIMMS NDVI3g data for vegetation phenology monitoring: a case study in deciduous forests of North America. *IEEE Journal of Selected Topics*

in *Applied Earth Observations and Remote Sensing*, 11, 800-807. <https://doi.org/10.1109/jstars.2017.2778076>

32. Moore J, **Zhu K**, Huntingford C, Cox P (2018), Equilibrium forest demography explains the distribution of tree sizes across North America. *Environmental Research Letters*, 13(8), 084019. <https://doi.org/10.1088/1748-9326/aad6d1>

31. Hakkenberg CR, **Zhu K**, Peet RK, Song C (2018), Mapping multi-scale vascular plant richness in a forest landscape with integrated LiDAR and hyperspectral remote-sensing. *Ecology*, 99, 474-487. <https://doi.org/10.1002/ecy.2109>

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30. Wilcox K, Shi Z, Gherardi LA, Lemoine NP, Koerner SE, Hoover DL, Bork E, Byrne K, Cahill J, Collins S, Evans S, Gilgen AK, Holub P, Jiang L, Knapp A, Laura Y, LeCain DR, Liang J, Peñuelas J, Pockman W, Smith M, White S, **Zhu K**, Luo Y (2017), Asymmetric responses of primary productivity to climate extremes: a synthesis of grassland precipitation manipulations. *Global Change Biology*, 23, 4376-4385. <https://doi.org/10.1111/gcb.13706>

29. Wang C, Chen J, Wu J, Tang Y, Shi P, Black A, **Zhu K** (2017), A snow-free vegetation index for improved monitoring of vegetation spring green-up date in deciduous ecosystems. *Remote Sensing of Environment*, 196, 1-12. <https://doi.org/10.1016/j.rse.2017.04.031>

28. Kuang X, **Zhu K**, Yuan Z, Lin F, Ye J, Wang X, Hao Z (2017), Conspecific density dependence and community structure: insights from 11 years of monitoring in an old-growth temperate forest in northeast China. *Ecology and Evolution*, 7, 5191-5200. <https://doi.org/10.1002/ece3.3050>

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27. **Zhu K**, Chiariello NR, Tobeck T, Fukami T, Field CB (2016), Nonlinear, interacting responses to climate limit grassland production under global change. *Proceedings of the National Academy of Sciences*, 113, 10589-10594. <https://doi.org/10.1073/pnas.1606734113>

- Cover article in [September 20, 2016](#) issue of *PNAS*.
- Featured by [Associated Press](#), [American Institute of Physics](#), [The Guardian](#), [Carnegie Institution for Science](#), and [Rice University](#).

26. Schliep EM, Gelfand AE, Clark JS, **Zhu K** (2016), Modeling change in forest biomass across the eastern US. *Ecological and Environmental Statistics*, 23, 23-41. <https://doi.org/10.1007/s10651-015-0321-z>

25. Ghosh S, **Zhu K**, Gelfand AE, Clark JS (2016), Joint modeling of climate niches for adult and juvenile trees. *Journal of Agricultural, Biological, and Environmental Statistics*, 21, 111-130. <https://doi.org/10.1007/s13253-015-0238-x>

24. Andresen LC, Müller C, Dato G, Dukes J, Emmett BA, Estiarte M, Jentsch-Beierkuhnlein A, Kröel-Dulay G, Luescher A, Niu S, Peñuelas J, Reich P, Reinsch S, Schmidt IK, Schneider M, Sternberg M, Tietema A, **Zhu K**, Bilton MC (2016), Shifting impacts of climate

change: long-term patterns of plant response to elevated CO₂, drought, and warming across ecosystems. In: *Advances in Ecological Research* (eds. Dumbrell, AJ, Kordas, RL & Woodward, G). Academic Press. Oxford, UK. pp. 437-473. <https://doi.org/10.1016/bs.aecr.2016.07.001>

23. Albright R, Hosfelt J, Kwiatkowski L, Maclaren JK, Mason BM, Nebuchina Y, Ninokawa A, Pongratz J, Ricke KL, Rivlin T, Schneider K, Sesboué M, Shamberger K, Silverman J, Wolfe K, **Zhu K**, Caldeira K (2016), Reversal of ocean acidification enhances net coral reef calcification. *Nature*, 531, 362-365. <https://doi.org/10.1038/nature17155>
- Featured by Lough JM (2016) *Coral reefs: Turning back time*. *Nature*. 531, 314-315.

2015

22. **Zhu K**, Woodall CW, Monteiro JVD, Clark JS (2015), Prevalence and strength of density-dependent tree recruitment. *Ecology*, 96, 2319-2327. <https://doi.org/10.1890/14-1780.1>

- Leading paper in the cover of [September 2015](#) issue of *Ecology*.

21. Woodall CW, Russell MB, Walters BF, D'Amato AW, **Zhu K**, Saatchi SS (2015), Forest production dynamics along a wood density spectrum in eastern US forests. *Trees - Structure and Function*, 29, 299-310. <https://doi.org/10.1007/s00468-014-1083-1>

20. Lankau RA, **Zhu K**, Ordonez A (2015), Mycorrhizal strategies of tree species correlate with trailing range edge responses to current and past climate change. *Ecology*, 96, 1451-1458. <https://doi.org/10.1890/14-2419.1>

- Leading paper in the cover of [June 2015](#) issue of *Ecology*.

2014

19. **Zhu K**, Woodall CW, Ghosh S, Gelfand AE, Clark JS (2014), Dual impacts of climate change: forest migration and turnover through life history. *Global Change Biology*, 20, 251-264. <https://doi.org/10.1111/gcb.12382>

- Featured by [North Carolina Public Radio WUNC](#), *The Chronicle*, [Duke University](#), and others.

18. Terborgh J, **Zhu K**, Álvarez-Loayza P, Cornejo-Valverde F (2014), How many seeds does it take to make a sapling? *Ecology*, 95, 991-999. <https://doi.org/10.1890/13-0764.1>

17. Clark JS, Gelfand AE, Woodall CW, **Zhu K** (2014), More than the sum of the parts: forest climate response from joint species distribution models. *Ecological Applications*, 24, 990-999. <https://doi.org/10.1890/13-1015.1>

16. Clark JS, Bell DM, Kwit MC, **Zhu K** (2014), Competition-interaction landscapes for the joint response of forests to climate change. *Global Change Biology*, 20, 1979-1991. <https://doi.org/10.1111/gcb.12425>

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15. Woodall CW, **Zhu K**, Westfall JA, Oswalt CM, D'Amato AW, Walters BF, Lintz HE (2013), Assessing the stability of tree ranges and influence of disturbance in eastern US forests.

Forest Ecology and Management, 291, 172-180. <https://doi.org/10.1016/j.foreco.2012.11.047>

14. Woodall CW, Westfall JA, **Zhu K**, Johnson DJ (2013), Assessing the effect of snow/water obstructions on the measurement of tree seedlings in a large-scale temperate forest inventory. *Forestry*, 86, 421-427. <https://doi.org/10.1093/forestry/cpt013>
13. Clark JS, Bell DM, Kwit MC, Powell A, **Zhu K** (2013), Dynamic inverse prediction and sensitivity analysis with high-dimensional responses: application to climate-change vulnerability of biodiversity. *Journal of Agricultural, Biological, and Environmental Statistics*, 18, 376-404. <https://doi.org/10.1007/s13253-013-0139-9>

2012

12. **Zhu K**, Woodall CW, Clark JS (2012), Failure to migrate: lack of tree range expansion in response to climate change. *Global Change Biology*, 18, 1042-1052. <https://doi.org/10.1111/j.1365-2486.2011.02571.x>

- Top 4% cited article (25 out of 608) in Web of Science.
- Recommended by [Faculty of 1000](#) (“Must Read”).
- Cited in textbook Smith TM and Smith RL (2015), *Elements of Ecology*, (9th edition, Pearson, page 601).
- Featured by [United Press International \(UPI\)](#), [American Association for the Advancement of Science \(AAAS\) EurekAlert!](#), [USA Today](#), [Climate Central](#), [Conservation Magazine](#), [The Charlotte Observer](#), [North Carolina Public Radio WUNC](#), [Duke University](#), and others.

11. **Zhu K**, Ghosh S, Gelfand AE, Clark JS (2012), New approaches to FIA data for understanding distribution, abundance, and response to climate change. In: *Moving from Status to Trends: Forest Inventory and Analysis (FIA) Symposium 2012*, USDA Forest Service, Northern Research Station, General Technical Report NRS-P-105. <https://www.nrs.fs.fed.us/pubs/42676>

10. Ghosh S, Gelfand AE, **Zhu K**, Clark JS (2012), The k-ZIG: flexible modeling for zero-inflated counts. *Biometrics*, 68, 878-885. <https://doi.org/10.1111/j.1541-0420.2011.01729.x>

9. Clark JS, Bell DM, Kwit M, Stine A, Vierra B, **Zhu K** (2012), Individual-scale inference to anticipate climate-change vulnerability of biodiversity. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367, 236-246. <https://doi.org/10.1098/rstb.2011.0183>

2011

8. Wang YS, Chu CJ, **Zhu K**, Shen ZH (2011), Effects of inter-specific variability on biomass allocation: a hierarchical Bayesian approach. *Ecological Informatics*, 6, 341-344. <https://doi.org/10.1016/j.ecoinf.2011.08.003>

7. Clark JS, Bell DM, Hersh MH, Kwit MC, Moran E, Salk C, Stine A, Valle D, **Zhu K** (2011), Individual-scale variation, species-scale differences: inference needed to understand di-

versity. *Ecology Letters*, 14, 1273-1287. <https://doi.org/10.1111/j.1461-0248.2011.01685.x>

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6. **Zhu K**, Gao Q, Zhang ZC, Zhou C (2008), A calibration problem in applying eddy-covariance technique to measure Bowen ratio. *Journal of Beijing Normal University (Natural Science)*, 44, 207-211.
5. **Zhu K**, Gao Q, Li X, Yang X (2008), Quantifying regional ecosystem services based on simulation using the SWAT model for the upper-mid Yellow River basin. In: *Proceedings of the 5th International SWAT Conference*, Beijing, China.
4. Zhang ZC, Liu JS, **Zhu K**, Tao Y, Shao ZY, Tian YQ (2008), Temporal patterns and driving factors of CO₂ flux at different soil depth profiles on typical steppe of Inner Mongolia. *Ecology and Environment*, 17, 2024-2030.
3. Tian YQ, Gao Q, Zhang ZC, Zhang Y, **Zhu K** (2009), The advances in study on plant photosynthesis and soil respiration of alpine grasslands on the Tibetan Plateau. *Ecology and Environmental Sciences*, 18, 711-721.
2. Liu Y, Yue JW, Li J, Cai HC, Qin M, Xu J, **Zhu K**, Peng C (2007), Research and application of PowerCMS middleware in information updating of agricultural e-commerce. *New Zealand Journal of Agricultural Research*, 50, 951-958.
1. Chen XH, Chen J, Yang W, **Zhu K** (2008), Study on combined classifier based on error analysis. *Journal of Remote Sensing*, 12, 683-691.

Presentations

INVITED SEMINARS

- 2023 University of Michigan, Department of Ecology and Evolutionary Biology, Ann Arbor, MI.
- 2022 University of California, Santa Cruz, Department of Statistics, Santa Cruz, CA.
University of California, Davis, Department of Evolution and Ecology, Davis, CA.
University of Connecticut, Department of Natural Resources and the Environment, Storrs, CT.
University of Michigan, School for Environment and Sustainability, Ann Arbor, MI.
- 2021 New Phytologist Tansley Medal Winner webinar (online).
University of California, Santa Cruz, Department of Earth and Planetary Sciences, Santa Cruz, CA (online).
University of California, Santa Cruz, Department of Computer Science and Engineering, Santa Cruz, CA (online).
Northern Arizona University, Department of Biological Sciences, Flagstaff, AZ (online).
Temple University, Department of Biology, Philadelphia, PA (online).

- Ecological Society of America, Sino-Ecologists Association Overseas (online).
- 2020 University of California, Santa Cruz, Department of Environmental Studies, Santa Cruz, CA (online).
Chinese Academy of Sciences, Biodiversity Committee and Chinese Forest Biodiversity Monitoring Network, Beijing, China (online).
- 2019 University of Georgia, Odum School of Ecology, Athens, GA.
University of California, Santa Cruz, Department of Environmental Studies, Santa Cruz, CA.
- 2018 University of California, Santa Cruz, Department of Applied Mathematics and Statistics, Santa Cruz, CA.
- 2017 Stanford University, Stanford Complexity Group, Stanford, CA.
Virginia Polytechnic Institute and State University, Department of Forest Resources and Environmental Conservation, Blacksburg, VA.
University of California, Riverside, Department of Environmental Sciences, Riverside, CA.
University of Oklahoma, Department of Microbiology and Plant Biology, Norman, OK.
University of California, Santa Cruz, Department of Environmental Studies, Santa Cruz, CA.
University of California, Davis, Department of Land, Air and Water Resources, Davis, CA.
- 2016 Beijing Normal University, State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing, China.
Chinese Academy of Sciences, Institute of Botany, Beijing, China.
Chinese Academy of Sciences, Institute of Tibetan Plateau Research, Beijing, China.
East China Normal University, School of Ecological and Environmental Sciences, Shanghai, China.
Sun Yat-sen University, School of Life Sciences, Guangzhou, China.
Rice University, Department of BioSciences, Houston, TX.
- 2015 University of Texas, Arlington, Department of Biology, Arlington, TX.
Rice University, Department of BioSciences, Houston, TX.
Carnegie Institution for Science, Department of Global Ecology, Stanford, CA.
Stanford University, Department of Biology, Stanford, CA.
- 2014 Duke University, Nicholas School of the Environment, Durham, NC.
- 2013 Stanford University, Department of Biology, Stanford, CA.
North Carolina State University, Department of Forestry and Environmental Resources, Raleigh, NC.
Peking University, Department of Ecology, Beijing, China.
Chinese Academy of Sciences, Institute of Botany, Beijing, China.

- 2012 Duke University, Department of Biology, Durham, NC.
Duke University, Nicholas School of the Environment, Durham, NC.
- 2011 Beijing Normal University, College of Resources Science and Technology, Beijing, China.
Duke University, Nicholas School of the Environment, Durham, NC.
- CONTRIBUTED CONFERENCES
- 2023 Ecological Society of America, Annual Meeting, Portland, OR.
- 2022 American Geophysical Union, Fall Meeting, Chicago, IL.
Ecological Society of America, Annual Meeting, Montréal, Québec, Canada (invited).
- 2021 American Geophysical Union, Fall Meeting, New Orleans, LA.
Ecological Society of America, Annual Meeting, Long Beach, CA (online).
- 2020 Ecological Society of America, Annual Meeting, Salt Lake City, UT (online).
- 2019 American Geophysical Union, Fall Meeting, San Francisco, CA.
National Ecological Observatory Network (NEON) Science Summit, Boulder, CO.
National Institute for Mathematical and Biological Synthesis, Knoxville, TN.
Biennial UC Santa Cruz Plant Sciences Symposium, Santa Cruz, CA.
- 2018 American Geophysical Union, Fall Meeting, Washington, DC.
Ecological Society of America, Annual Meeting, New Orleans, LA.
- 2017 Ecological Society of America, Annual Meeting, Portland, OR.
National Center for Ecological Analysis and Synthesis, Santa Barbara, CA.
National Institute for Mathematical and Biological Synthesis, Knoxville, TN.
- 2016 American Geophysical Union, Fall Meeting, San Francisco, CA.
Ecological Society of America, Annual Meeting, Fort Lauderdale, FL.
- 2015 American Geophysical Union, Fall Meeting, San Francisco, CA.
Ecological Society of America, Annual Meeting, Baltimore, MD.
- 2014 American Geophysical Union, Fall Meeting, San Francisco, CA.
Ecological Society of America, Annual Meeting, Sacramento, CA.
- 2013 Ecological Society of America, Annual Meeting, Minneapolis, MN.
National Center for Atmospheric Research, Next Generation Climate Data Products Workshop, Boulder, CO.
National Science Foundation, Macrosystems Research Training Workshop: Integrating

Evidence on Forest Response to Climate Change, Durham, NC.
International Biogeography Society, Biennial Conference, Miami, FL.

- 2012 USDA Forest Service, Forest Inventory and Analysis (FIA) Symposium, Baltimore, MD.
National Science Foundation, Research Coordination Network – Forecasts of Resource and Environmental Changes: Data Assimilation Science and Technology (RCN-FORECAST) Initiative Conference, Woods Hole, MA.
Ecological Society of America, Annual Meeting, Portland, OR.
National Science Foundation, Coweeta Long Term Ecological Research (LTER) Summer Symposium, Otto, NC.
- 2011 Ecological Society of America, Annual Meeting, Austin, TX.
National Science Foundation, Coweeta Long Term Ecological Research (LTER) Mid-Term Review, Otto, NC.
Virginia Polytechnic Institute and State University, North American Forest Ecology Workshop, Roanoke, VA.
- 2008 Beijing Normal University, International Soil and Water Assessment Tool (SWAT) Conference, Beijing, China.
National Science Foundation of China, Forum on Integrated Eco-hydrology Study of Inland Water Basin, Lanzhou, China.

Media Appearances

- 2023 University of Michigan, [Meet the future: Big data and sustainability solutions](#).
- 2021 University of California, Santa Cruz, [New study shows plants struggle to keep pace with climate change in human-dominated landscapes](#).
University of California, Santa Cruz, [Quantitative ecologist Kai Zhu wins NSF funding for climate change research and education](#).
Popular Science, [Why forests in the Andes are crucial to fighting climate change](#).
NPR-member radio station KAZU, [What a decade of counting seeds tells us about future West Coast forests](#).
University of California, Santa Cruz, [UC Santa Cruz faculty recognized for excellence in ecology](#).
Good Times Santa Cruz, [Study finds climate change alters West Coast trees](#).
University of California, Santa Cruz, [Forest monitoring efforts contribute to new understanding of climate change impacts](#).
- 2020 University of California, Santa Cruz, [Quantitative ecologist wins Tansley Medal for plant science contributions](#).
Stanford University, [Fire history and plant community drive changes in soil microbiome, outweighing global change factors](#).
- 2019 University of California, Santa Cruz, [Major NSF grant supports research on soil fungi](#).

- 2018 [The Guardian, Climate change will make hundreds of millions more people nutrient deficient.](#)
 United Press International, [Forest growth limited over next 60 years, study finds.](#)
 American Association for the Advancement of Science, [New research calculates capacity of North American forests to sequester carbon.](#)
 University of California, Santa Cruz, [New research calculates capacity of North American forests to sequester carbon.](#)
 University of California, Santa Cruz, [Soil fungi may help determine the resilience of forests to environmental change, according to UC Santa Cruz study.](#)
- 2016 Associated Press, [Future climate change field test doesn't make Earth greener.](#)
[The Guardian, New study undercuts favorite climate myth 'more CO2 is good for plants'.](#)
 American Institute of Physics, [California grasslands grow less, not more, under climate change.](#)
 Rice University, [Warmer, wetter climate would impair California grasslands.](#)
 Carnegie Institution for Science, [Grassland tuned to present suffers in a warmer future.](#)
 Rice University, [Ocean acidification already slowing coral reef growth.](#)
- 2015 Associated Press, [Figuring the odds of Earth's global hot streak.](#)
- 2013 North Carolina Public Radio WUNC, [Climate change speeding up life cycles of trees.](#)
 Duke Chronicle, [Study examines effect of climate change on forest turnover.](#)
 Duke University, [Climate change may speed up forests' life cycles.](#)
- 2011 United Press International, [Trees not adapting well to climate change.](#)
 American Association for the Advancement of Science, [Forests not keeping pace with climate change.](#)
[USA Today, Most U.S. forests not adapting to climate change.](#)
 Climate Central, [Can trees keep up with climate change?](#)
[Conservation Magazine, Failure to migrate.](#)
[The Charlotte Observer, Eastern forests not adapting quickly to climate change.](#)
 North Carolina Public Radio WUNC, [Rising temps tough on some trees.](#)
 Duke University, [Forests not keeping pace with climate change.](#)

Professional Activities

GRANT PROPOSAL PANEL REVIEWS

- 2022 National Science Foundation, Directorate for Computer and Information Science and Engineering, Office of Advanced Cyberinfrastructure.
- 2021 National Science Foundation, Directorate for Biological Sciences, Division of Biological Infrastructure.
 National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology.
- 2019 National Aeronautics and Space Administration, Research Opportunities in Space and Earth Science.

2018 Department of Agriculture, National Institute of Food and Agriculture.
University of California, Institute for Mexico and the United States.

GRANT PROPOSAL AD HOC REVIEWS

2022 UK Research and Innovation, Natural Environment Research Council.
Poland National Science Centre.

2019 National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology.
UK Research and Innovation, Natural Environment Research Council.

2018 Rocky Mountain Biological Laboratory.

2017 National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology.
Department of Defense, Strategic Environmental Research and Development Program.

2015 National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology.

2014 National Science Foundation, Directorate for Biological Sciences, Division of Environmental Biology.

JOURNAL EDITORIAL BOARDS

2023– Advisor, *New Phytologist*

2023 Committee Member, Editor-in-Chief Search Committee, *Frontiers in Ecology and the Environment*

2022– Associate Editor, *Frontiers in Ecology and the Environment*

JOURNAL MANUSCRIPT REVIEWS

Acta Oecologica (2014)

Advances in Water Resources (2013)

Agricultural and Forest Meteorology (2018, 2020)

American Naturalist (2017)

Annals of Applied Statistics (2019)

Biology Letters (2016)

BMC Plant Biology (2018)

Canadian Journal of Forest Research (2020)

Carbon Balance and Management (2021)

Climatic Change (2013)

Data-Enabled Discovery and Applications (2017)

Earth System Science Data (2018)

Ecography (2012, 2014a, 2014b, 2015, 2016, 2019)
Ecological Applications (2015, 2018, 2022a, 2022b)
Ecology (2013a, 2013b, 2016, 2019, 2020, 2022)
Ecology and Evolution (2015)
Ecology Letters (2014a, 2014b, 2016, 2017a, 2017b, 2018a, 2018b, 2018c, 2019, 2020a, 2020b, 2022, 2023a, 2023b)
Ecosphere (2019, 2020)
Ecosystems (2013)
Environmental Conservation (2013)
Environmental Research Letters (2020, 2021, 2022)
European Journal of Forest Research (2010)
Forest Ecology and Management (2013)
Forests (2018)
Frontiers in Ecology and Evolution (2020)
Frontiers in Ecology and the Environment (2018)
Frontiers in Marine Science (2019)
Functional Ecology (2016, 2017)
Global Change Biology (2013, 2015a, 2015b, 2015c, 2015d, 2015e, 2017, 2019, 2022a, 2022b)
Global Ecology and Biogeography (2015, 2016, 2018, 2019a, 2019b, 2020)
Global Ecology and Conservation (2021)
Journal of Arid Environments (2020)
Journal of Biogeography (2012a, 2012b, 2013, 2015, 2017)
Journal of Ecology (2014a, 2014b, 2017a, 2017b, 2017c, 2018a, 2018b, 2018c, 2019, 2021)
Journal of Plant Ecology (2012)
Methods in Ecology and Evolution (2022)
National Science Review (2017, 2021)
Nature (2022)
Nature Climate Change (2016, 2021)
Nature Communications (2018, 2020)
Nature Ecology and Evolution (2020, 2023)
Nature Geoscience (2020)
New Phytologist (2018a, 2018b, 2019, 2022)
Oecologia (2015)
PLOS ONE (2015, 2017a, 2017b)
Philosophical Transactions of the Royal Society B: Biological Sciences (2016)
Proceedings of the National Academy of Sciences (2012, 2015, 2017a, 2017b, 2018, 2019a, 2019b, 2022, 2023)
Remote Sensing (2018, 2019a, 2019b, 2019c)
Remote Sensing of Environment (2022)
Science (2022)
Science of the Total Environment (2017, 2018)
Scientific Reports (2014, 2018)
Soil Biology and Biochemistry (2018)
Transactions in GIS (2012)

BOOK PROPOSAL REVIEWS

2017 Oxford University Press

SYNERGISTIC ACTIVITIES

- 2023 Convener, American Geophysical Union, Fall Meeting, Organized Session.
- 2022 Convener, American Geophysical Union, Fall Meeting, Organized Session.
- 2021–2024 Committee Member, Ecological Society of America, Publications Committee.
- 2019–2020 Elected Member, National Ecological Observatory Network, Data Standards Technical Working Group.
Elected Member, National Ecological Observatory Network, Ecological Forecasting Technical Working Group.
- 2019 Faculty Member, National Ecological Observatory Network, Data Education Scholars Faculty Mentoring Network.
External Reviewer, Department of Agriculture Forest Service.
- 2013 Co-organizer, Ecological Society of America, Annual Meeting, Organized Oral Session.

University Service

- 2023– Committee Member, University of Michigan, Institute for Global Change Biology, Faculty Executive Committee.
Committee Member, University of Michigan, Michigan Institute for Data Science, Program Committee.
- 2022– Committee Member, University of Michigan, Institute for Global Change Biology, Faculty Steering Committee.
Committee Member, University of Michigan, Institute for Global Change Biology, Postdoc Selection Committee.
- 2022–2023 Committee Member, University of Michigan, School for Environment and Sustainability, Faculty Search Committee.
- 2022 Faculty Panelist, University of California, Santa Cruz, NSF CAREER Information Session.
- 2021–2022 Committee Chair, University of California, Santa Cruz, Department of Environmental Studies, Awards Committee.
Committee Member, University of California, Santa Cruz, Department of Environmental Studies, Graduate Committee.
Committee Member, University of California, Santa Cruz, Department of Environmental Studies, Chair Succession Committee.
Committee Member, University of California, Santa Cruz, Jean H. Langenheim Graduate Fellowship in Plant Ecology and Evolution & Hardman Native Plant Award Committee.

- 2021 Committee Member, University of California, Santa Cruz, Jean H. Langenheim Graduate Fellowship in Plant Ecology and Evolution & Hardman Native Plant Award Committee.
- 2019–2020 Committee Member, University of California, Santa Cruz, Department of Environmental Studies, Curriculum Committee.
Department Representative, University of California, Santa Cruz, Division of Social Sciences, Global Health – Health Data Faculty Search Committee
- 2019 Panelist, University of California, Santa Cruz, Doris Duke Conservation Scholars Program. External Reviewer, Ecological Society of America, Early Career Ecologist Section.
- 2018–2019 Committee Chair, University of California, Santa Cruz, Department of Environmental Studies, Awards Committee.
Committee Member, University of California, Santa Cruz, Department of Environmental Studies, Chair Succession Committee.
- 2018 Member, University of California, Santa Cruz, Data Science Strategic Academic Planning Themed Academic Working Group.
Committee Member, University of California, Santa Cruz, Jean H. Langenheim Graduate Fellowship in Plant Ecology and Evolution & Hardman Native Plant Award Committee.
- 2017–2018 Committee Member, University of California, Santa Cruz, Department of Environmental Studies, Personnel and Awards Committee.
- 2015 Panelist, Stanford University, Chinese Students and Scholars Symposium.
Committee Member, Stanford University, Association of Chinese Students and Scholars.
- 2014 Co-host, Stanford University, Graduate Summer Institute, Jasper Ridge Tour.
- 2013 Committee Member, Duke University, University Program in Ecology Symposium *Ecology across Scales*.
- 2011 International Student Representative, Duke University, Nicholas School of the Environment, Fall Orientation Committee.
- 2010–2011 Committee Member, Duke University, Chinese Student and Scholar Association.
- 2009–2010 Committee Member, Duke University, Nicholas School of the Environment, PhD Student Government.

Advising & Mentoring

POSTDOCTORAL SCHOLAR ADVISOR

- 2023– Wenqi Luo
(Co-advised with Donald R. Zak)
University of Michigan
- 2022– Liting Zheng
(Co-advised with Peter B. Reich)
University of Michigan
- 2021–2022 Michael Van Nuland

(Co-advised with Kabir G. Peay)
University of California, Santa Cruz & Stanford University

2020–2022 Peter T. Pellitier
(Co-advised with Kabir G. Peay)
University of California, Santa Cruz & Stanford University
NSF Postdoctoral Research Fellowships in Biology

2019 Brian S. Steidinger
(Co-advised with Kabir G. Peay)
University of California, Santa Cruz & Stanford University
Humboldt Research Fellowship for Experienced Researchers

2018 Lan Liu
(Co-advised with Jian Zhang)
University of California, Santa Cruz & East China Normal University

2017–2018 Cong Wang
University of California, Santa Cruz & University of Texas, Arlington

DOCTORAL STUDENT ADVISOR

2023– Jiali Zhu
University of Michigan, School for Environment and Sustainability

2023– Tim Muhich
(Co-advised with Michaela T. Zint)
University of Michigan, School for Environment and Sustainability

2023– Yi Liu
University of Michigan, School for Environment and Sustainability

2023– Shike Zhang
University of Michigan, School for Environment and Sustainability

2018– Yiluan Song
University of California, Santa Cruz, Department of Environmental Studies
Regent's Fellowship & Hammett Fellowship
E.C. Pielou Award, Ecological Society of America

2018–2022 Clara Qin
University of California, Santa Cruz, Department of Environmental Studies
Chancellor's Fellowship & Regent's Fellowship
Ford Foundation Predoctoral Fellowship Honorable Mention

2021–2022 Hayes Devaney
(Co-advised with Nicole Feldl)
University of California, Santa Cruz, Department of Earth and Planetary Sciences

2019–2022 Sarah Lummis
(Co-advised with Kristy J. Kroeker)

University of California, Santa Cruz, Department of Ecology and Evolutionary Biology

DOCTORAL STUDENT COMMITTEE MEMBER

- 2023— Charlotte Probst
Advisor: Brian Weeks
University of Michigan, School for Environment and Sustainability
- 2022 Zach Horton
Advisor: Thanasis Kottas
University of California, Santa Cruz, Department of Statistics
- 2022 Carrie Hamilton
Advisor: Jeffrey Bury
University of California, Santa Cruz, Department of Environmental Studies
- 2022 Sifat Chowdhury
Advisor: Yu Zhang
University of California, Santa Cruz, Department of Electrical and Computer Engineering
- 2022 Shuangjie Zhang
Advisor: Juhee Lee
University of California, Santa Cruz, Department of Statistics
- 2021—2022 Christina Blebea
Advisor: Karen D. Holl
University of California, Santa Cruz, Department of Environmental Studies
- 2021—2022 Ted Liu
Advisor: Galina Hale
University of California, Santa Cruz, Department of Economics
- 2020—2022 Siyu Luo
Advisor: J. Elliott Campbell
University of California, Santa Cruz, Department of Environmental Studies
- 2020— Melanie K. Taylor
Advisor: Nina Wurzburger
University of Georgia, Odum School of Ecology
- 2019—2021 Brook Constantz
Advisor: Karen D. Holl
University of California, Santa Cruz, Department of Environmental Studies
- 2019—2022 Jon Detka
Advisor: Gregory S. Gilbert
University of California, Santa Cruz, Department of Environmental Studies
- 2019—2022 Daniel Hastings
Advisor: Michael E. Loik
University of California, Santa Cruz, Department of Environmental Studies

- 2019–2020 David Shaw
 Advisor: Chris Benner
 University of California, Santa Cruz, Department of Environmental Studies
- 2018–2021 Anna Nisi
 Advisor: Christopher C. Wilmers
 University of California, Santa Cruz, Department of Environmental Studies
- 2018–2019 Graeme Baird
 Advisor: Carol Shennan
 University of California, Santa Cruz, Department of Environmental Studies
- 2017–2022 Nazanin Rezaei
 Advisor: Adam Millard-Ball
 University of California, Santa Cruz, Department of Environmental Studies
- 2016–2020 J. Therese Lamperty
 Advisor: Amy E. Dunham
 Rice University, Department of BioSciences

MASTER'S STUDENT MENTOR

- 2023– Graham Fordice
 University of Michigan, School for Environment and Sustainability
- 2022– Yilun Zhao
 University of Michigan, School for Environment and Sustainability
- 2022– Ruoyu Wu
 University of Michigan, School for Environment and Sustainability
- 2022 Jessica Pan
 University of California, Santa Cruz, Department of Computer Science and Engineering
- 2022 Chuangbo Tong
 University of California, Santa Cruz, Department of Computer Science and Engineering
- 2019–2020 Ross Davison
 University of California, Santa Cruz, Graduate Program in Coastal Science and Policy
- 2019 Kaixin Liu
 University of California, Santa Cruz, Department of Computer Science and Engineering
- 2019 Diana Gerardo
 University of California, Santa Cruz, Department of Statistics
- 2019 Mary Silva
 University of California, Santa Cruz, Department of Statistics
- 2018–2020 Erica Mullins
 University of California, Santa Cruz, Department of Environmental Studies

- 2018 Brett Stacy
University of California, Santa Cruz, Department of Applied Mathematics and Statistics
- 2014–2015 Clara Qin
Stanford University, Department of Biology & Department of Statistics
- 2013–2014 Siyu Qin
Duke University, Nicholas School of the Environment

UNDERGRADUATE STUDENT MENTOR

- 2023– Oviyan Anbarasu
University of Michigan, Data Science
- 2023– Chenyang Zhang
University of Michigan, Mathematics & Data Science
- 2023– Ziyu Zhou
University of Michigan, Statistics
- 2023 Zhe Chen
University of Michigan, Computer Science
- 2023 Chun Ho Ries Cheung
University of Michigan, Computer Science
- 2022 Tyler Morton
University of California, Santa Cruz, Computer Science and Engineering
- 2022 Sammy Tesfai
University of California, Santa Cruz, Computer Science and Engineering
- 2021 Luke Hamilton
University of California, Santa Cruz, Earth and Planetary Sciences
- 2021 Megan T. Cao
University of California, Santa Cruz, Environmental Studies & Economics
- 2020–2021 Benjamin K. Weaver
University of California, Santa Cruz, Environmental Studies
- 2020 Caitlin A. Schilt
University of California, Santa Cruz, Environmental Studies & Economics
- 2020–2021 Noa Mills
University of California, Santa Cruz, Mathematics & Computer Science and Engineering
- 2019–2020 Priscilla Lam
University of California, Santa Cruz, Environmental Studies & Computer Science and Engineering
- 2018–2021 Christopher Zajic
University of California, Santa Cruz, Earth and Planetary Sciences

2018 William Jiajie Li
University of California, Santa Cruz, Earth and Planetary Sciences

2018–2019 Grace Reed
University of California, Santa Cruz, Environmental Studies

Courses

INSTRUCTOR

2019–2022 Data Science for the Environment
University of California, Santa Cruz

2019–2021 General Ecology
University of California, Santa Cruz

2018–2021 Landscape Ecology
University of California, Santa Cruz

2016 Design and Analysis of Biological Experiments
Rice University

2016 Bayesian Analysis for Ecologists
Sun Yat-sen University

GUEST LECTURER

2017–2021 Research Approaches in Environmental Studies
University of California, Santa Cruz

2018 Ecology and Society
University of California, Santa Cruz

2018 Climate Change Ecology
University of California, Santa Cruz

2018 Graduate Research Seminar
University of California, Santa Cruz

2016 Core Course in Ecology and Evolutionary Biology
Rice University

TEACHING ASSISTANT

2014 Landscape Analysis and Management
Duke University

2009 Spatial-Temporal Environmental Models
Duke University

2007 Methods and Practices of Ecosystem Modeling

2006

Beijing Normal University
Principles of Terrestrial Ecosystem Ecology
Beijing Normal University

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