YONGYANG CAI

326 Agricultural Administration Building
2120 Fyffe Road, Columbus, OH 43210
E-mail: cai.619@osu.edu

Education

PhD, Computational and Mathematical Engineering, Stanford University, 2010
MS, Financial Mathematics, Stanford University, 2008

Research Interest

Climate Change Economics; Computational Economics; Environmental and Resource Economics; Integrated Modeling; Decision Making under Uncertainty

Employment

2022-present	Professor, Department of Agricultural, Environmental and Development Economics, The Ohio State University
2016-present	Core Faculty, Sustainability Institute, The Ohio State University
2016-2022	Associate Professor (with tenure since June 2019), Department of Agricultural, Environmental and Development Economics, The Ohio State University
2015-2016	Senior Research Scientist, Becker Friedman Institute, University of Chicago
2015-2016	Visiting Fellow, Hoover Institution, Stanford University
2013-2015	Research Scientist, Becker Friedman Institute, University of Chicago
2011-2015	Researcher, Hoover Institution, Stanford University
2012	Visiting Scholar, Energy Policy Institute at Chicago, University of Chicago
2011-2013	Postdoc, National Bureau of Economic Research
2010-2011	Postdoc, Dept. of Management Science & Engineering, Stanford University
2004-2010	Research Assistant, Hoover Institution & ICME, Stanford University
2002-2004	Research Assistant, Dept. of Computer Science, University of New Mexico
1999-2002	Senior Software Engineer, Zhongxing Telecommunication Corporation

Honors & Awards

- The 2021 Erik Kempe Award in environmental and resource economics (https://www.eaere.org/erik-kempe-award)
- The 2018 Nobel Committee cited my work in their scientific report for supporting the award of the Nobel Prize in Economics to William Nordhaus
- A White House report in July 2014 featured my work

Grants & Fellowships (total grant > $50 million; PI/co-PI grant > $5 million)

- National Science Foundation grant RISE-2108917, "DISES: Coproducing actionable science to understand, mitigate, and adapt to cyanobacterial harmful algal blooms (CHABS)", 2022-2025, USD 1,600,000, Co-PI (starting in 2023). (PI: Christine Kirchhoff)
- United States Department of Agriculture ERS grant 58-3000-3-0079, "The Impact of the EU's carbon intensity plans on agriculture trade", 2024-2025, USD 40,000, PI.

- National Science Foundation grant OAC-2112606, "AI Intelligent CyberInfrastructure with Computational Learning in the Environment (ICICLE)", 2021-2024, USD 20,000,000. (PI: Dhabaleswar Panda) https://icicle.osu.edu/
- National Science Foundation grant SRS-2115405, "Multiscale RECIPES (Resilient, Equitable, and Circular Innovations with Partnership and Education Synergies) for Sustainable Food Systems", 2021-2026, USD 15,000,000. (PI: Sauleh Siddiqui) https://wastedfood.american.edu/
- National Science Foundation grant SES-1739909, "INFEWS/T1: Impacts of Deglobalization on the Sustainability of Regional Food, Energy, Water Systems", 2017-2023, USD 2,400,000, Co-PI. (PI: Elena Irwin) https://drfews.osu.edu/home
- United States Department of Agriculture NIFA-AFRI grant 2018-68002-27932, "Building a sustainable and resilient agroecosystem through an understanding of climate and farmer behavioral variability", 2018-2023, USD 1,200,000, Co-PI. (PI: Robyn Wilson)
- Office of Research's COVID-19 seed funding program (The Ohio State University), "Global Disruption Due to Covid-19: Evaluating the Potential Impact on the Ohio Economy", 2020, USD 30,000, PI.
- National Science Foundation grant SES-1463644, "DMUU: Center for Robust Decision-Making Tools for Climate and Energy Policy", 2015-2020, USD 4,500,000. (PI: Elisabeth Moyer; former PI: Ian Foster) https://www.rdcep.org/
- United States Department of Agriculture NIFA-AFRI grant 2015-67023-22905, "Will Global Change Jeopardize the US Forest Carbon Sink", 2015-2017, USD 500,000. (PI: Thomas Hertel)
- National Science Foundation grant SES-0951576, "DMUU: Center for Robust Decision-Making Tools for Climate and Energy Policy", 2011-2016, USD 6,000,000. (PI: Ian Foster) https://www.rdcep.org/
- Great Lakes Consortium for Petascale Computation projects at the Blue Waters Supercomputer, "Policy Responses to Climate Change in a Dynamic Stochastic Economy", 2013-2020, 1,465,000 node hours, PI (former PI: Lars Peter Hansen).
- Beagle supercomputer climate project at Computation Institution of the University of Chicago, 2012-2015, PI.
- Visiting scholarship, Energy Policy Institute at Chicago, University of Chicago, 2012
- Postdoctoral research fellowship, Hoover Institution and MS&E, Stanford University, 2010-2011
- Research assistantship, Hoover Institution and ICME, Stanford University, 2004-2010
- Research assistantship, Department of Computer Science, University of New Mexico, 2002-2004

Referred Journal Publications

1. Steinbuks, Jevgenijs, Yongyang Cai, Jonas Jaegermeyr, and Thomas W. Hertel (2024). Assessing Effects of Climate and Technology Uncertainties in Large Natural Resource Allocation Problems. *Geoscientific Model Development*, 17(12), 4791–4819. https://gmd.copernicus.org/articles/17/4791/2024/ (Its earlier versions include the World Bank Policy Research working paper 9159 titled "Modeling Uncertainty in Large Natural Resource Allocation Problems", and the World Bank Policy Research Working Paper 7009 titled "The effect of climate and technological uncertainty in crop yields on the optimal path of global land use")
2. Li, Yang, Michael A Wulder, Zhe Zhu, Jan Verbesselt, Dainius Masiliūnas, Yanlan Liu, Gil Bohrer, Yongyang Cai, Yuyu Zhou, Zhaowei Ding, Kaiguang Zhao (2024). DRMAT: A multivariate algorithm for detecting breakpoints in multispectral time series. *Remote Sensing of Environment* (2023 impact factor: 11.1), 315, 114402 (15 pages). https://doi.org/10.1016/j.rse.2024.114402
3. Cai, Yongyang, and Kenneth Judd (2023). A Simple but Powerful Simulated Certainty Equivalent Approximation Method for Dynamic Stochastic Problems. ***Quantitative Economics***, 14(2), 651–687. (An earlier version is NBER working paper 28502) https://doi.org/10.3982/QE1835

4. Cai, Yongyang, William Brock, and Anastasios Xepapadeas (2023). Climate change impact on economic growth: regional climate policy under cooperation and noncooperation. ***Journal of the Association of Environmental and Resource Economists***, 10(3), 569–605. https://doi.org/10.1086/722274
5. Golub, Alla, Brent Sohngen, Yongyang Cai, John Kim, and Thomas Hertel (2022). Costs of forest carbon sequestration in the presence of climate impacts. *Environmental Research Letters*, 17(10), 104011 (11 pages). https://iopscience.iop.org/article/10.1088/1748-9326/ac8ec5
6. Li, Yang, Yanlan Liu, Gil Bohrer, Yongyang Cai, Tongxi Hu, Zhihao Wang, and Kaiguang Zhao (2022). Impacts of forest loss on local climate across the conterminous United States. *Science of the Total Environment* (2021 impact factor: 10.75)*,* 802, 149651 (19 pages). https://doi.org/10.1016/j.scitotenv.2021.149651
7. Cai, Yongyang (2021). The role of uncertainty in controlling climate change. *Oxford Research Encyclopedia of Economics and Finance* (34 pages), Oxford University Press. https://doi.org/10.1093/acrefore/9780190625979.013.573
8. Baldwin, Elizabeth, Yongyang Cai, and Karlygash Kuralbayeva (2020). To build or not to build? Capital stocks and climate policy. ***Journal of Environmental Economics and Management***, 100, 102235 (24 pages). https://doi.org/10.1016/j.jeem.2019.05.001 (An earlier version is titled with "Build now, regret later? Infrastructure and climate policy")
9. Cai, Yongyang, and Thomas S. Lontzek (2019). The social cost of carbon with economic and climate risks. ***Journal of Political Economy***, 127(6), 2684–2734. https://doi.org/10.1086/701890
    - A White House report in July 2014, titled with "The cost of delaying action to stem climate change", features this paper with its conclusion that high social cost of carbon can be justified without assuming the possibility of catastrophic events.
    - Its earlier versions include Hoover economic working paper 18113, arXiv:1504.06909, NBER working paper 18704 ("The social cost of stochastic and irreversible climate change"), RDCEP working paper 12-02 ("DSICE: A dynamic stochastic integrated model of climate and economy"), and RDCEP working paper 12-03 ("Tipping points in a dynamic stochastic IAM"), all of which were written with Ken Judd.
10. Cai, Yongyang (2019). Computational methods in environmental and resource economics. *Annual Review of Resource Economics* 11, 59–82. https://doi.org/10.1146/annurev-resource-100518-093841
11. Cai, Yongyang, Harris Selod, and Jevgenijs Steinbuks (2018). Urbanization and land property rights. *Regional Science and Urban Economics*, 70, 246–257. (An earlier version is World Bank Policy Research Working Paper 7486) https://doi.org/10.1016/j.regsciurbeco.2018.04.007
12. Cai, Yongyang, Alla A. Golub, and Thomas W. Hertel (2017). Agricultural research spending must increase in light of future uncertainties. *Food Policy* 70, 71–83. https://doi.org/10.1016/j.foodpol.2017.06.002
13. Cai, Yongyang, Kenneth L. Judd, and Jevgenijs Steinbuks (2017). A nonlinear certainty equivalent approximation method for dynamic stochastic problems. ***Quantitative Economics***, 8(1), 117–147. (An earlier version is NBER working paper 21590) https://doi.org/10.3982/QE533
14. Cai, Yongyang, Kenneth L. Judd, Thomas S. Lontzek, Valentina Michelangeli, and Che-Lin Su (2017). A nonlinear programming method for dynamic programming. *Macroeconomic Dynamics*, 21, 336–361. (An earlier version is NBER working paper 19034) https://doi.org/10.1017/S1365100515000528
15. Yeltekin, Sevin, Yongyang Cai, and Kenneth L. Judd (2017). Computing equilibria of dynamic games. ***Operations Research***, 65(2): 337–356. https://doi.org/10.1287/opre.2016.1572
16. Cai, Yongyang, Timothy M. Lenton, and Thomas S. Lontzek (2016). Risk of multiple interacting tipping points should encourage rapid CO2 emission reduction. ***Nature Climate Change*** (2016 impact factor: 19.3), 6, 520–525. https://doi.org/10.1038/nclimate2964
    - The article is featured by News & Views of *Nature Climate Change* in 2016 with a report titled with "Climate change economics: Reacting to multiple tipping points" written by Frederick van der Ploeg (https://www.nature.com/articles/nclimate2962), and an editorial article titled with "The devil is in the deep tail" (https://www.nature.com/articles/nclimate3021).

17. Cai, Yongyang, and Alan H. Sanstad (2016). Model uncertainty and energy technology policy: the example of induced technical change. *Computers & Operations Research* 66, 362–373. (An earlier version is RDCEP Working Paper No. 14-01.) https://doi.org/10.1016/j.cor.2015.07.014
18. Cai, Yongyang, Kenneth L. Judd, Timothy M. Lenton, Thomas S. Lontzek, and Daiju Narita (2015). Environmental tipping points significantly affect the cost-benefit assessment of climate policies. ***Proceedings of the National Academy of Sciences*** (2015 impact factor: 9.4), 112(15), 4606–4611. https://doi.org/10.1073/pnas.1503890112
19. Lontzek, Thomas S., Yongyang Cai, Kenneth L. Judd, and Timothy M. Lenton (2015). Stochastic integrated assessment of climate tipping points indicates the need for strict climate policy. ***Nature Climate Change*** (2015 impact factor: 17.2), 5, 441–444. https://doi.org/10.1038/nclimate2570
    - The 2018 Nobel Committee's scientific report, titled with "Economic growth, technological change, and climate change", cited this paper for supporting the award of the Nobel Prize in Economics to William Nordhaus.
20. Cai, Yongyang, and Kenneth L. Judd (2015). Dynamic programming with Hermite approximation. *Mathematical Methods of Operations Research*, 81, 245–267. (An earlier version is "Dynamic programming with Hermite interpolation, RDCEP working paper 12-09.") https://doi.org/10.1007/s00186-015-0495-z
21. Cai, Yongyang, Kenneth L. Judd, Greg Thain, and Steven Wright (2015). Solving dynamic programming problems on a computational grid. *Computational Economics*, 45(2), 261–284. (An earlier version is NBER working paper 18714.) https://doi.org/10.1007/s10614-014-9419-x
22. Cai, Yongyang, and Kenneth L. Judd (2013). Shape-preserving dynamic programming. *Mathematical Methods of Operations Research*, 77(3), 407–421. https://doi.org/10.1007/s00186-012-0406-5
23. Cai, Yongyang, Kenneth L. Judd and Thomas S. Lontzek (2012). Open science is necessary. ***Nature Climate Change*** (2012 impact factor: 14.5), Vol. 2, Issue 5, 299. https://doi.org/10.1038/nclimate1509
24. Cai, Yongyang, and Kenneth L. Judd (2012). Dynamic programming with shape-preserving rational spline Hermite interpolation. *Economics Letters*, 117(1), 161–164. https://doi.org/10.1016/j.econlet.2012.05.004
25. Cai, Yongyang, and Kenneth L. Judd (2010). Stable and efficient computational methods for dynamic programming. ***Journal of the European Economic Association****,* 8(2–3), 626–634. https://doi.org/10.1111/j.1542-4774.2010.tb00532.x
26. Kapur, Deepak, and Yongyang Cai (2009). An algorithm for computing a Grobner basis of a polynomial ideal over a ring with zero divisors. *Mathematics in Computer Science,* 2(4), 601–634. https://link.springer.com/article/10.1007/s11786-009-0072-z
27. Cai, Yongyang (1999). An improvement on the QL algorithm for symmetric tridiagonal matrices. *Numer. Math. J. Chinese Univ. (English Ser.),* 8(1): 35–38.

Book Chapters

28. Cai, Yongyang, and Kenneth L. Judd (2014). Advances in numerical dynamic programming and new applications. Chapter 8 in: ***Handbook of Computational Economics****,* Vol. 3, (Karl Schmedders and Kenneth L. Judd, eds.), 479–516, Elsevier. https://doi.org/10.1016/B978-0-444-52980-0.00008-6

Selected Working Papers

29. Cai, Yongyang, Khyati Malik, and Hyeseon Shin (2023). Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. arXiv:2312.15563 [econ.GN]. https://arxiv.org/abs/2312.15563
30. Cai, Yongyang, William Brock, Anastasios Xepapadeas, and Kenneth Judd (2019). Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. arXiv:1909.04009 [econ.GN] (NBER working paper 24473). https://arxiv.org/abs/1909.04009

31. Cai, Yongyang, Kenneth L. Judd and Rong Xu (2020). Numerical solution of dynamic portfolio optimization with transaction costs. arXiv:2003.01809 [q-fin.PM] (NBER working paper 18709). https://arxiv.org/abs/2003.01809
32. Cai, Yongyang, Kenneth L. Judd, and Thomas S. Lontzek (2012). Continuous-time methods for integrated assessment models. NBER working paper 18365. https://www.nber.org/papers/w18365
33. Cai, Yongyang, Alla A. Golub, and Thomas W. Hertel (2016). Developing long-run agricultural R&D policy in the face of uncertain economic growth. ASSA 2017 conference paper. https://www.aeaweb.org/conference/2017/preliminary/paper/Er934Tb8
34. Cai, Yongyang, Kenneth L. Judd and Thomas S. Lontzek (2018). Numerical dynamic programming with verification and uncertainty quantification: an application to climate policy. Working paper. https://www.imfs-frankfurt.de/fileadmin/user_upload/Events_2018/MMCI_Conference/Papers/90-Kenneth_Judd-Numerical_Dynamic_Programming_with_Verification_and_Uncertainty_Quantification.pdf

Selected Other Publications

35. Cai, Yongyang (2017). Tipping risks call for stringent climate policy. Discovery Themes blog, The Ohio State University. https://discovery.osu.edu/tipping-risks-call-stringent-climate-policy
36. Cai, Yongyang (2010). Dynamic programming and its application in economics and finance, PhD thesis, Stanford University.

Conference Presentations and Invited Talks

1. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited presentation, Climate Change Economics Forum (virtual), December 2024. https://www.bilibili.com/video/BV1q2qaYHE5F/?spm_id_from=333.999.0.0
2. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited presentation (virtual), Workshop of Climate Finance & Risk 2024, Tokyo, Japan, November 2024.
3. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited keynote speech, 2nd China Energy Modeling Youth Forum, August 2024.
4. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited seminar, School of Advanced Agricultural Science, Peking University, July 2024.
5. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited seminar, University of Chinese Academy of Sciences, July 2024.
6. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited seminar, Beijing Institute of Technology, July 2024.
7. Climate Policy under Spatial Heat Transport and Risks: Cooperative and Noncooperative Regional Outcomes. Invited keynote speech, PACE 2024 International Conference on Theory and Policies of Green and Low-carbon Development in China, June 2024.
8. Dynamics of Global Emission Permit Prices and Regional Social Cost of Carbon under Noncooperation. Invited seminar, Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign, February 2024.
9. Climate Policy under Spatial Heat Transport and Risks: Cooperative and Noncooperative Regional Outcomes. Invited presentation (virtual), Workshop of Stochastic Modelling in Climate Risk: Financial Mathematics and Economics, Tokyo, Japan, November 2023.
10. Dynamics of Global Emission Permit Prices under Noncooperation. Invited keynote speech, PACE 2023 International Conference on Theory and Policies of Green and Low-carbon Development in China, August 2023.
11. Advanced Computational Methods for Dynamic Stochastic Problems. Invited seminar, Institutes of Science and Development, Chinese Academy of Sciences, July 2023.

12. Advanced Computational Methods for Dynamic Stochastic Problems. Invited seminar, Center for Energy and Environmental Policy Research, Beijing Institute of Technology, July 2023.
13. Climate Change Impact on Economic Growth: Regional Climate Policy under Cooperation and Noncooperation. Invited presentation, Climate Change Economics Forum (virtual), June 2023. https://www.bilibili.com/video/BV1pc411g7jf/?spm_id_from=333.999.0.0
14. The role of uncertainty in controlling climate change. Invited seminar (virtual), School of Public Finance and Taxation, Southwestern University of Finance and Economics, December 2022.
15. The social cost of carbon with economic and climate risks. The invited Erik Kemp Award Ceremony talk (virtual), Umeå University, October 2022.
16. Methods and Applications of Integrated Assessment Models with Uncertainty. Invited seminar (virtual), Institutes of Science and Development, Chinese Academy of Sciences, August 2022.
17. Integrated Assessment Model and Uncertainty. Invited seminar (virtual), Center for Energy and Environmental Policy Research, Beijing Institute of Technology, July 2022.
18. Climate Change Impact on Economic Growth: Regional Climate Policy under Cooperation and Noncooperation. Invited keynote speech (virtual), PACE 2022 International Conference on Theory and Policies of Green and Low-carbon Development in China, June 2022.
19. A Simple but Powerful Simulated Certainty Equivalent Approximation Method for Dynamic Stochastic Problems. Invited seminar (virtual), School of Economics and Management, University of Chinese Academy of Sciences, June 2022.
20. Social Cost of Carbon with Climate Tipping Points, Sea Level Rise, and Damage on Economic Growth. Invited seminar (virtual), Department of Economics, Ningbo University, April 2022.
21. Economic implications of multiple interacting tipping points. Invited presentation (virtual), OECD Expert Workshop Economic Modelling of Climate and Related Tipping Points, OECD, October 2021. https://www.youtube.com/watch?v=7IBG8GBp6mY
22. The social cost of carbon with economic and climate risks. Invited seminar, Economics and Management School, Wuhan University, July 2021.
23. Capital stocks and climate policy: The discussion of carbon taxes' role. Invited seminar (virtual), School of Public Finance and Taxation, Southwestern University of Finance and Economics, July 2021.
24. Climate Change Impact on Economic Growth: Regional Climate Policy under Cooperation and Noncooperation. The 26th EAERE Annual Conference (virtual), June 2021.
25. Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. The 2021 North American Summer Meetings of the Econometric Society (virtual), June 2021.
26. Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. Invited seminar (virtual), Center for Energy & Environmental Policy Research, Beihang University, December 2020.
27. Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. Invited seminar (virtual), Center for Energy and Environmental Policy Research, Beijing Institute of Technology, November 2020.
28. A dynamic regional economic model to evaluate impacts of deglobalizing forces on food, energy and water systems and the sustainability of the Great Lakes region. AAEA Annual Meeting (virtual), August 2020.
29. Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. The 25th EAERE Annual Conference (virtual), June 2020.
30. Climate Policy under Spatial Heat Transport: Cooperative and Noncooperative Regional Outcomes. 2019 INFORMS Annual Conference, Seattle, Washington, October 2019.
31. Climate Policy with Carbon Removal and Storage in a Dynamic Stochastic Economy. 2019 INFORMS Annual Conference, Seattle, Washington, October 2019.
32. Climate Policy in a Dynamic Stochastic Economy. Invited talk, Blue Waters Symposium, Sunriver, Oregon, June 2019. https://www.youtube.com/watch?v=n54ewMijtlc
33. To Build or Not to Build? Capital Stocks and Climate Policy. The 8th AERE Annual Summer Conference, Lake Tahoe, Nevada, May 2019.

34. Building a Dynamic Equilibrium Regional Economic Model for the Food, Energy and Water System. PMAT meeting, Columbus, November 2018.
35. Climate Policy under Cooperation and Competition between Regions with Spatial Heat Transport. SEA 88th Annual Meeting, Washington DC, November 2018.
36. Climate Policy under Cooperation and Competition between Regions with Spatial Heat Transport. 2018 INFORMS Annual Conference, Phoenix, November 2018.
37. Dynamic Portfolio Choice. Invited talk, nICE workshop, Stanford University, August 2018.
38. NLCEQ: A Nonlinear Certainty Equivalent Approximation method. Invited talk, nICE workshop, Stanford University, August 2018.
39. Climate Policy under Cooperation and Competition between Regions with Spatial Heat Transport. The 2018 China Meeting of the Econometric Society, Shanghai, June 2018.
40. To Build or Not to Build? Capital Stocks and Climate Policy. The 2nd Research Conference on Macroeconomic Modelling and Model Comparison, Stanford University, June 2018.
41. Climate Policy under Cooperation and Competition between Regions with Spatial Heat Transport. Invited talk, Blue Waters Symposium, Sunriver, Oregon, June 2018. https://www.youtube.com/watch?v=wfDAJN_g2ao
42. To Build or Not to Build? Capital Stocks and Climate Policy. Sustainable and Resilient Economics, The Ohio State University, February 2018.
43. Build now, regret later? Infrastructure and Climate Policy. 2017 INFORMS Annual Conference, Houston, Texas, October 2017.
44. Urbanization and property rights. International Society of Dynamic Games (ISDG) – China Chapter Conference on Dynamic Games and Game Theoretic Analysis, Ningbo, China, August 2017.
45. Policy Responses to Climate Change in a Dynamic Stochastic Economy. U.S. Business Council for Sustainable Development Conference, The Ohio State University, July 2017.
46. Build now, regret later? Infrastructure and Climate Policy. The 20th Annual Conference on Global Economic Analysis, Purdue University, June 2017.
47. Climate change impacts in a stochastic dynamic model of forestry. The 6th AERE Annual Summer Conference, Pittsburgh, Pennsylvania, June 2017.
48. Climate Change Economics and Heat Transport across the Globe: Spatial-DSICE. Invited talk, The Conference on the Macro and Micro Economics of Climate Change, Santa Barbara, May 2017.
49. Dynamic stochastic integration of climate and economy. Invited talk, Byrd Polar and Climate Research Center, The Ohio State University, February 2017.
50. Spatial DSICE and Min-max Regret. RDCEP External Advising Board meeting, University of Chicago, January 2017.
51. Climate Change Economics and Heat Transport across the Globe: Spatial-DSICE. ASSA Annual Meeting 2017, Chicago, January 2017.
52. The social cost of carbon with economic and climate risks. Invited presentation, Economic Research in High Performance Computing Environments Workshop, Federal Reserve Bank of Kansas City, Kansas, October 2016.
53. NLCEQ: A nonlinear certainty equivalent approximation method for dynamic stochastic problems. Invited presentation, ICE 2016, Hoover Institution, Stanford, July 2016.
54. The social cost of carbon with economic and climate risks. The 2016 North American Summer Meetings of the Econometric Society, Philadelphia, June 2016.
55. Policy responses to climate change in a dynamic stochastic economy. Invited talk, Blue Waters Symposium, Sunriver, Oregon, June 2016.
56. The social cost of carbon with economic and climate risks. Invited seminar, Department of Agricultural & Resource Economics, The University of Maryland, College Park, February 2016.
57. DSICE: a framework for social cost of carbon with uncertainty. RDCEP All Hands Meeting, University of Chicago, December 2015.
58. The social cost of carbon with economic and climate risks. Invited seminar, Department of Agricultural, Environmental and Development Economics, The Ohio State University, January 2016.

59. Bayesian learning in dynamic stochastic integration of climate and economy. The 4th AERE Annual Summer Conference, San Diego, California, June 2015.
60. The impact of economic and climate risks on the social cost of carbon. RDCEP All Hands Meeting, University of Chicago, November 2014.
61. The impact of economic and climate risks on the social cost of carbon. Invited presentation, Developing the Next Generation of Economic Models of Climate Change Conference, University of Minnesota, September 2014.
62. Massive parallelism in economics and climate change. Invited dinner talk at ATPESC 2014, Argonne National Lab, August 2014. https://www.youtube.com/watch?v=KkfL7WKHzY8
63. Numerical solutions for solving dynamic portfolio problems. SITE 2014, Stanford University, July 2014.
64. Nonlinear certainty equivalent method for high-dimensional dynamic programming problems. Invited presentation, ICE 2014, Hoover Institution, Stanford, July 2014.
65. Optimal climate policy in the face of uncertainty. Invited seminar, Center for Global Trade Analysis, Purdue University, May 2014.
66. The social cost of stochastic and irreversible climate change and Bayesian learning. Invited talk, The World Bank, Washington D.C., December 2013.
67. The social cost of stochastic and irreversible climate change. AGU Annual Meeting, San Francisco, December 2013.
68. Dynamic stochastic integration of climate and economy. RDCEP All Hands Meeting, University of Chicago, October 2013.
69. The social cost of stochastic and irreversible climate change. Invited presentation, INFORMS Annual Meeting, Minneapolis, October 2013.
70. Numerical dynamic programming and parallelization. Invited talk, Summer 2013 Computation in CA, Stanford University, July 2013.
71. Parallelization and GSSA. Invited talk, Summer 2013 Computation in CA, Stanford University, July 2013.
72. Advances in numerical dynamic programming and new applications. Invited talk, Workshop: Advances in Numerical Methods for Economics, International Monetary Fund, Washington D.C., June 2013. https://www.youtube.com/watch?v=avmoLzmZjj8
73. Parallelization for computational economics. Invited talk, Department of Economics, Stanford University, December 2012.
74. DSICE: dynamic stochastic integration of climate and economy. Invited talk, Computation Institute, University of Chicago, November 2012.
75. DICE-CJL & DSICE: integrated assessment models. Invited talk, Initiative for Computational Economics, University of Chicago, July 2012.
76. Tipping points in a dynamic stochastic IAM. The 2nd AERE Annual Summer Conference, Asheville, North Carolina, June 2012.

Teaching & Advising

Teaching (The Ohio State University)
AEDE 8303 – Climate Change Economics, Autumn 2021, 2023
AEDE 7120 – Advanced Quantitative Methods II, Autumn 2019, 2021-2024
AEDE 7110 – Advanced Quantitative Methods I, Autumn 2019-2024
AEDE 8602 – Advanced Computational, Mathematical, and Quantitative Methods, Autumn 2020
AEDE 7320 – Advanced Resource Economics, Spring 2018-2020
AEDE 4002.01 – Econometric Applications in Agribusiness and Applied Economics, Autumn 2018
AEDE 8895 – PhD Research Seminars, Autumn 2018
AEDE 6120 – Applied Quantitative Analysis, Spring 2018
AEDE 8200 – Frontiers of Applied Economics (computational methods in economics), Spring 2017

Guest Lecturer
AEDE 7320 – Advanced Resource Economics, OSU, Spring 2017
Econ 288 – Computational Economics, Stanford University, Fall 2012

Workshop Lecturer
new Initiative for Computational Economics (nICE) summer workshop, Stanford University, 2018
Initiative for Computational Economics (ICE) summer workshop, University of Chicago, 2012

Graduate Student Advising

Doctoral Student (Advisor / Co-Advisor)

2016-2018	Yu Zhang, The Ohio State University (placement: Assistant Professor, University of International Business and Economics)
2018-2019	Di Wu, The Ohio State University (placement: Assistant Professor, Zhejiang Gongshang University)
2016-2021	Ziyu Guo, The Ohio State University
2017-2022	Ziqian Gong, The Ohio State University (placement: Postdoc, North Carolina State University)
2020-present	Junyoung Jeong, The Ohio State University
2023-present	Alexander Ryan, The Ohio State University
2023-present	Wei Wang, The Ohio State University
2024-present	Sarah Ganbat, The Ohio State University

Doctoral Student (Dissertation Committee Member)

2016-2018	Shaohui Tang, The Ohio State University
2017-2018	Yun Pu, The Ohio State University (placement: Assistant Professor, Southwestern University of Finance and Economics)
2019-2023	Junyi Hua, The Ohio State University (placement: Assistant Professor, City University of Macau)
2021-2023	Yang Li, The Ohio State University
2023-2024	Yanchen Hu, The Ohio State University
2023-2024	Brian Cultice, The Ohio State University
2022-present	Khyati Malik, The Ohio State University
2022-present	Hyeseon Shin, The Ohio State University

Doctoral Student (Candidacy Exam Committee)

2018	Ziyu He, University of California, Santa Cruz

Postdoc Supervising

2018-2019	Shaohui Tang, The Ohio State University

Service

Editorship
Associate Editor, *Climatic Change*, 2021-2025
Editorial Board, *Computational Economics*, 2020-present
Guest Editor, a special issue of the journal "*Mitigation and Adaptation Strategies for Global Change*", 2018-2019

Reviewer of Economic Journals

American Economic Review; Journal of Political Economy; Quarterly Journal of Economics; Review of Economic Studies
American Economic Journal: Economic Policy; American Economic Journal: Macroeconomics; American Economic Review: Insights; American Journal of Agricultural Economics; Computational Economics; Economics Letters; Economics of Innovation and New Technology; Energy Economics; Environmental Economics and Policy Studies; Environmental and Resource Economics; Journal of Climate Finance; Journal of Economic Dynamics and Control; Journal of the European Economic Association; Journal of Environmental Economics and Management; Journal of Forest Economics; Journal of Global Economic Analysis; Journal of the Association of Environmental and Resource Economists; Journal of Mathematical Economics; Management Science; Quantitative Economics; Resource and Energy Economics; Studies in Nonlinear Dynamics & Econometrics

Reviewer of Other Journals
Nature; Proceedings of the National Academy of Sciences
Advances in Atmospheric Sciences; Applied Mathematics; Climatic Change; Earth's Future; Ecosystem Services; Environmental Research Letters; Journal of Agricultural Science and Technology; Journal of Cleaner Production; Mitigation and Adaptation Strategies for Global Change; Nature Climate Change; Nature Communications; One Earth

Reviewer of Grant Proposals
Alfred P. Sloan Foundation; Austrian Science Fund (FWF); European Research Council; National Science Foundation; National Natural Science Foundation of China; Swiss National Science Foundation; Swiss National Supercomputing Centre

Other Review Service
Agricultural & Applied Economics Association annual meeting (abstract reviewer); Czech National Bank; The Annual Conference on Global Economic Analysis (abstract reviewer)

Organizer/Co-organizer/Panelist/Moderator
National Academies Workshop on the Dynamics of Climate and the Macroeconomy 2023 session "Nonlinear, Cascading, and Compounding Risks in the Economy" (panelist)
National Academies Workshop on the Dynamics of Climate and the Macroeconomy 2023 session "Capacity Building and Collaboration" (moderator)
INFORMS 2021 cluster of sessions about energy and climate (cluster chair and organizer)
INFORMS 2021 session "Decarbonization and Climate Policy" (chair and organizer)
INFORMS 2019 session "Economic Development, Energy and Climate" (chair and organizer)
INFORMS 2019 session "Economic Growth, Environment and Climate" (chair and organizer)
INFORMS 2018 session "Advances in Integrated Assessment Modeling" (chair and organizer)
INFORMS 2017 session "Energy and Climate" (chair and organizer)
ASSA 2017 session "Decision Making in the Face of Economic and Climate Uncertainty" (co-organizer)
ICE 2014 Workshop (co-organizer)
Workshop of Summer 2013 Computation in CA (co-organizer)

Departmental Service (The Ohio State University)

2017-present	Faculty mentor for undergraduate students
2017-2023	Member, Seminar Committee
2022-2023	Member, Faculty Search Committee
2018-2021	Member, Graduate Studies Committee
2019	Member, Nomination Committee

University Service (The Ohio State University)

CFAES Research Award Committee (William E. Krauss Award), 2023
CFAES Programmatic Priorities, 2022
Reviewer, President's Research Excellence program, 2021
CFAES Fellowship Review Committee, 2021, 2022
Sustainability Research Seed Grant Proposals Reviewer, 2021
CFAES Environmental Fellowship Committee, 2020
Judge, CFAES Graduate Poster Competition 2019, 2020, 2021
Graduate Faculty Representative for PhD Oral Exams:

Theresia Georges Yazbeck (2024, Civil Engineering); Richa Verma (2022, Electrical & Computer Engineering); Ariel Garsow (2022, Food Science and Technology); Yan Zhao (2020, Computer Science and Engineering); Jon Michel (2019, Economics); Nam Gang Lee (2018, Economics); Hyungjo Hur (2017, The John Glenn College of Public Affairs)

Other Professional Service
INFORMS Best Paper Committee for Natural Resources, 2021
Faculty Promotion Evaluator: Zhejiang University (2022); University of Lausanne (2023)

Professional Affiliations

American Economic Association (AEA); Association of Environmental and Resource Economists (AERE); Agricultural and Applied Economics Association (AAEA); Econometric Society; European Association of Environmental and Resource Economists (EAERE); The Institute for Operations Research and the Management Sciences (INFORMS)