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Vivek Srikrishnan ⑧

Vivek Srikrishnan

research interests	Climate risk management
	Coupled natural-human systems
	Complex system dynamics
	Decision-making under uncertainty
	Uncertainty characterization

appointments

Assistant Professor, Department of Biological & Environmental Engineering, Cornell University, 2021–present

Visiting Assistant Professor, Department of Biological & Environmental Engineering, Cornell University, 2020–2021

Assistant Research Professor, Earth & Environmental Systems Institute, Pennsylvania State University, 2019–2021

Postdoctoral Scholar, Earth & Environmental Systems Institute, Pennsylvania State University, 2018–2019

education

Ph.D., Energy & Mineral Engineering, Pennsylvania State University, 2018

M.S., Energy & Mineral Engineering, Pennsylvania State University, 2015

B.S., Mathematics, University of Illinois at Urbana-Champaign, 2004

B.A., Philosophy, University of Illinois at Urbana-Champaign, 2004

publications

Peer-Reviewed Journal Articles

Keller, K., Helgeson, C., and **Srikrishnan, V.** 2021. Climate Risk Management. *Annu. Rev. Earth Planet. Sci.* **49** (1), 95–116. DOI: `10.1146/annurev-earth-080320-055847`.

Errickson, F. C., Keller, K., Collins, W. D., **Srikrishnan, V.**, and Anthoff, D. 2021. Equity is more important for the social cost of methane than climate uncertainty. *Nature* **592** (7855), 564–570. DOI: `10.1038/s41586-021-03386-6`.

Wan, H., Yoon, J., **Srikrishnan, V.**, Daniel, B., and Judi, D. 2021. Population Downscaling Using High-Resolution, Temporally-Rich U.S. Property Data. *Cartography and Geographic Information Science*, 1–14. DOI: `10.1080/15230406.2021.1991479`.

Srikrishnan, V. and Keller, K. 2021. Small increases in agent-based model complexity can result in large increases in required calibration data. *Environmental Modelling & Software* **138**, 104978. DOI: `10.1016/j.envsoft.2021.104978`.

Helgeson, C., **Srikrishnan, V.**, Keller, K., and Tuana, N. 2021. Why Simpler Computer Simulation Models Can Be Epistemically Better for Informing Decisions. *Philos. Sci.* **88** (2), 213–233. DOI: `10.1086/711501`.

Zarekarizi, M., **Srikrishnan, V.**, and Keller, K. 2020. Neglecting uncertainties biases house-elevation decisions to manage riverine flood risks. *Nature Communications.* DOI: `10.1038/s41467-020-19188-9`.

Ruckert, K. L., **Srikrishnan, V.**, and Keller, K. 2019. Characterizing the deep uncertainties surrounding coastal flood hazard projections: A case study for Norfolk, VA. en. *Sci. Rep.* **9** (1), 11373. DOI: `10.1038/s41598-019-47587-6`.

Current as of 2022/01/20

Srikrishnan, V., Alley, R., and Keller, K. 2019. Investing in science to improve climate risk management. *Eos* **100**. DOI: `10.1029/2019eo131077`.

Morris, J., **Srikrishnan, V.**, Webster, M., and Reilly, J. 2018. Hedging strategies: Electricity investment decisions under policy uncertainty. *The Energy Journal* **39** (1). DOI: `10.5547/01956574.39.1.jmor`.

Wong, T. E., Klufas, A., **Srikrishnan, V.**, and Keller, K. 2018. Neglecting model structural uncertainty underestimates upper tails of flood hazard. *Environmental Research Letters* **13** (7), 074019. DOI: `10.1088/1748-9326/aacb3d`.

Wong, T. E., **Srikrishnan, V.**, Hadka, D., and Keller, K. 2017. A multi-objective decision-making approach to the journal submission problem. *PLoS One* **12** (6), e0178874. DOI: `10.1371/journal.pone.0178874`.

Oddo, P. C., Lee, B. S., Garner, G. G., **Srikrishnan, V.**, Reed, P. M., Forest, C. E., and Keller, K. 2017. Deep uncertainties in sea-level rise and storm surge projections: Implications for coastal flood risk management. *Risk Analysis*. DOI: `10.1111/risa.12888`.

Srikrishnan, V., Young, G. S., and Brownson, J. R. S. 2017. Skill and skill prediction of cloud-track advection-only forecasting under a cumulus-dominated regime. *Journal of Applied Meteorology and Climatology* **56** (3), JAMC–D–16–0224.1. DOI: `10.1175/JAMC-D-16-0224.1`.

Srikrishnan, V., Young, G. S., Witmer, L. T., and Brownson, J. R. S. 2015. Using multi-pyranometer arrays and neural networks to estimate direct normal irradiance. *Solar Energy* **119**, 531–542. DOI: `10.1016/j.solener.2015.06.004`.

Conference Proceedings

Srikrishnan, V., Brownson, J. R. S., and Young, G. S. 2014. The All-Seeing Eye: Using Multi-Pyranometer Arrays and Neural Networks to Estimate Direct Normal Irradiance. In: *43rd ASES National Solar Conference 2014, SOLAR 2014, Including the 39th National Passive Solar Conference and the 2nd Meeting of Young and Emerging Professionals in Renewable Energy*. American Solar Energy Society, pp.511–518.

Conference Presentations

Lucash, M. S., Huang, J., **Srikrishnan, V.**, Keller, K., Klippel, A., Scheller, R. M., Nicholas, R., and Smithwick, E. 2019. *Using robust decision-making and virtual reality to analyze management tradeoffs under climate change*. International Association of Landscape Ecologists World Congress. Milan, Italy.

Srikrishnan, V. 2015. *Validity of Taylor's hypothesis across time scales: Implications for solar forecasting*. 44nd American Solar Energy Society Meeting. State College, PA, USA.

Srikrishnan, V. 2014. *The All-Seeing Eye: Using multi-pyranometer arrays and neural networks to estimate direct normal irradiance*. 43rd American Solar Energy Society Meeting. San Francisco, CA, USA.

Conference Posters

Srikrishnan, V., Guan, Y., Tol, R. S. J., and Keller, K. 2019. *Fossil fuel resources, decarbonization, and economic growth are key drivers of feasibility to achieve Paris climate targets*. American Geophysical Union Fall Meeting 2019. San Francisco, CA, USA.

Srikrishnan, V., Guan, Y., Tol, R. S. J., and Keller, K. 2019. *Fossil fuel resources, decarbonization, and economic growth are key drivers of feasibility to achieve Paris climate targets*. Society for Decision-Making Under Deep Uncertainty 2019 Workshop. Delft, Netherlands.

Wong, T. E., **Srikrishnan, V.**, Vega-Westhoff, B., Errickson, F., and Ledna, C. 2019. *Probabilistic projections for timing of global sea-level thresholds.* American Geophysical Union Fall Meeting 2019. San Francisco, CA, USA.

Srikrishnan, V. and Keller, K. 2018. *Can we calibrate and identify agent-based models of flood risk adaptation?* American Geophysical Union Fall Meeting 2018. Washington, DC, USA.

Steinke, I., **Srikrishnan, V.**, and Keller, K. 2018. *Implications of radiation management for coastal flooding risks — A case study of New Orleans.* European Geophysical Union General Assembly 2018. Vienna, Austria.

Srikrishnan, V., Wong, T. E., Garner, G. G., and Keller, K. 2017. *Combining remote and local observations in a direct policy search for coastal flood defense under deep uncertainty.* Society for Decision-Making Under Deep Uncertainty 2017 Workshop. Oxford, UK.

Spence, C., Salazar, J., Quinn, J., **Srikrishnan, V.**, Koszuta, M., Reed, P. M., and Keller, K. 2017. *Quantifying the deep uncertainties surrounding climate impacts on water systems.* Society for Decision-Making Under Deep Uncertainty 2017 Workshop. Oxford, UK.

Srikrishnan, V. and Keller, K. 2016. *Identifying signposts for adaptive flood risk management strategies.* Society for Decision-Making Under Deep Uncertainty 2016 Workshop. Washington, DC, USA.

Srikrishnan, V., Young, G. S., and Brownson, J. R. S. 2015. *The error from Taylor's hypothesis for solar forecasting.* Penn State Initiative for Sustainable Electric Power Systems Workshop on Power Systems and Markets. State College, PA, USA.

invited talks
"Climate Risk, Uncertainty, and Coupled Energy Systems", New Energy Series, Irving Institute, Dartmouth College. Remote. Jan. 2022.

"Uncertainty and Climate Risk Management", Center for Applied Mathematics Colloquium, Cornell University. Ithaca (NY), USA. Nov. 2021.

"A Systems Approach to Climate Risk Management", Ezra's Round Table, Cornell University. Ithaca (NY), USA. Sep. 2021.

"How Likely Are the Most Extreme CO_2 Emissions Scenarios?", MIT Joint Program on the Science and Policy of Global Change Seminar, Massachusetts Institute of Technology. Remote. Aug. 2020.

"How Likely Are the Most Extreme CO_2 Emissions Scenarios?", Energy and Environmental Economics and Policy Seminar, Pennsylvania State University. University Park (PA), USA. Feb. 2020.

"Climate Risk Management: A Decision-Centered Approach", Tufts Civil and Environmental Engineering Seminar, Tufts University. Medford (MA), USA. Nov. 2019.

"Adaptive Multi-Objective Robust Decision-Making", Carnegie Mellon-Penn State Workshop on Multi-Objective Robust Decision-Making, Pennsylvania State University. University Park (PA), USA. Aug. 2019.

"From Earth-System Science to Coastal Hazards and Back", Environmental and Sustainability Seminar, Carnegie Mellon University. Pittsburgh (PA), USA. May 2019 (with Klaus Keller).

"Agent-Based Models: The New 'Plastic' or the Emperor's Clothes?", Program on Coupled Natural-Human Systems Research Seminar, Pennsylvania State University. University Park (PA), USA. Mar. 2019 (with Klaus Keller).

"From Earth-System Science to Coastal Hazards and Back", Pacific Northwest National Laboratory. Richland (WA), USA. Mar. 2019 (with Klaus Keller).

"From Earth-System Science to Coastal Hazards and Back", Joint Global Change Research Institute. College Park (MD), USA. Feb. 2019 (with Klaus Keller).

"Can We Avoid a (Rational) Route to Collapse?", Workshop on Managing Natural Resource Risk in the Modern and Prehistoric World, Santa Fe Institute. Santa Fe (NM), USA. Oct. 2018 (with Klaus Keller).

"Hedging Strategies for Electricity Investment Decisions Under Policy Uncertainty", Energy and Mineral Engineering Graduate Seminar, Pennsylvania State University. University Park (PA), USA. Mar. 2016.

workshops organized

Carnegie Mellon-Penn State Workshop on Multi-Objective Robust Decision-Making. University Park (PA), USA. Aug. 2019.

grants and contracts

Investigator, Institutional Lead, "Understanding Multistressor and Multiscale Drivers of Feedbacks, Cascading Failures, and Risk Management Pathways within Complex MSD Systems". PI: Karen Fisher-Vanden. DOE (BER), $533,922 (total: $16,900,000). 2021–2026.

Co-PI, "Health Effects of Decarbonization (HEALED)". PI: Wei Peng. NSF, $50,001 (total: $399,472). 2021–2024.

Investigator, Task Lead, "Integrated Coastal Modeling (ICoM)". PI: Ian Kraucunas. DOE (BER), $139,825. 2021–2022.

Investigator, Task Lead, "Integrated Coastal Modeling (ICoM)". PI: Ian Kraucunas. DOE (BER), $1,200,000. 2019–2021.

Investigator, "Integrated Multi-Scale Multi-Sector Modeling (IM3)". PI: Jennie Rice. DOE (BER), $25,000. 2019–2020.

networks and projects

Visualizing Forest Futures (ViFF). Participant. PI: Erica Smithwick. National Science Foundation. 2019–2021.

Project on Coupled Human and Earth Systems (PCHES). Participant. PI: Karen Fisher-Vanden and John Weyant. Department of Energy, Biological and Environmental Research. 2018–2021.

Network for Sustainable Climate Risk Management (SCRiM). Participant. PI: Klaus Keller. National Science Foundation. 2016–2019.

teaching

Cornell University

Environmental Systems Analysis. Primary Instructor. Fall 2021.

Pennsylvania State University

Thermodynamics in Energy and Mineral Engineering. Teaching Assistant. Fall and Spring 2014, 2015, 2016.

Calculus with Analytic Geometry I. Primary Instructor. Spring 2011.

Integral Vector Calculus. Primary Instructor. Spring 2010.

Calculus with Analytic Geometry II. Primary Instructor. Fall 2009.

Ordinary Differential Equations. Primary Instructor. Summer 2008, 2010.

Symplectic Geometry. Teaching Assistant. Fall 2008.

Ordinary and Partial Differential Equations. Primary Instructor. Fall and Spring 2007, 2008, 2009.

Ordinary Differential Equations. Primary Instructor. Fall 2006.

Trigonometry and Analytic Geometry. Primary Instructor. Fall 2005, 2010.

Calculus of Several Variables. Primary Instructor. Fall and Spring 2004, 2006.

advising   *Cornell University*

Parin Bhaduri, Ph.D Biological & Environmental Engineering. Advisor. 2021–present.
Chloe Darnell, M.S. Biological & Environmental Engineering. Advisor. 2021–present.

Pennsylvania State University

Carl Frederick Aquino, M.S. Geosciences. Committee member. 2020–present.
Xinyuan Huang, Ph.D. Civil and Environmental Engineering. Committee member. 2019–present.
Carl Frederick Aquino, B.S. Geosciences. Co-advisor. 2019–2020.

awards   Graduate Research Fellowship Honorable Mention, National Science Foundation. 2015
Harold F. Martin Graduate Assistant Outstanding Teaching Award, Pennsylvania State University Graduate School. 2011
Charles H. Hoover Memorial Award, Pennsylvania State University Department of Mathematics. 2010
Departmental Teaching Award, Pennsylvania State University Department of Mathematics. 2008
ZZRQ Award, Pennsylvania State University Department of Mathematics. 2006

outreach   Taught session on multi-objective robust decision-making, SCRiM Summer School. 2018, 2019.

service   Co-Organizer, BEE Department Seminar. 2021.
Associate Deputy Editor, *Climatic Change*. 2021–present.
Co-Chair, MultiSector Dynamics Working Group on Uncertainty Quantification and Scenario Development. 2019–present.
Member, MultiSector Dynamics Community of Practice Scientific Steering Group. 2019–present.
Co-Convener and Co-Chair, AGU Session on MultiSector Dynamics: Science and Modeling for Societal Transformations II. 2020.
Co-Guest Editor, *Water*. Special Issue on 'Climate Model Projections: Sea-Level Rise and Impacts on Coastal Defense Decision-Making'. Forthcoming.

professional experience   Research Assistant, Brownson Solar Research Group, Pennsylvania State University). 2011–2014
Technical Editor, Journal of Modern Dynamics). 2008–2010