

# Frank C. Errickson

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## Positions

*AAAS Science & Technology Policy Fellow*, Office of the Chief Economist, Office of the Under Secretary for Economic Growth, Energy and the Environment, U.S. Department of State, *Incoming Fall 2024*

*Postdoctoral Scholar*, School of Public & International Affairs, Princeton University, 2020-2024

## Education

- Ph.D. Energy and Resources, University of California, Berkeley, 2020  
Committee: David Anthoff (*chair*), Klaus Keller, & William D. Collins  
Fields: *climate science, environmental economics, & data science*
- M.S. Energy and Resources, University of California, Berkeley, 2016
- M.A. Atmospheric Science & Development Economics, Columbia University, 2011
- B.A. Political Science, *summa cum laude*, Stockton University, 2009  
Minor in Environmental Science, *Sustainability & Environmental Policy Concentration*

## Affiliations

Affiliate Member, [Resources for the Future Social Cost of Carbon Initiative](#), 2021-2023  
Associate Member, [Climate Futures Initiative](#), Princeton University, 2018-2024  
Doctoral Fellow, [Society, Environment, and Economics Lab](#), UC Berkeley, 2014-2020  
Doctoral Member, [The Network for Sustainable Climate Risk Management](#), 2016-2020

## Peer-reviewed publications

\* indicates publications where I am a co-lead author with equal contribution

16. Darnell, C., **Errickson, F.C.\***, Rennels, L., Wong, T., and Srikrishnan, V. (2024). “Impacts of emissions uncertainty on Antarctic instability and sea-level rise.” *Revisions requested at Nature Climate Change*.
15. Bressler, D., Shimberg, N., Rennels, L., Parthum, B., Smith, D., **Errickson, F.C.**, and Anthoff, D. (2024). “Large disproportionate mortality effects on the global poor drive a higher income-weighted social cost of CO<sub>2</sub>.” *Under review at Nature*.
14. Wang, P., Peng, W., Budolfson, M., Deshpande, A., Wagner, F., **Errickson, F.C.**, Huang, X., Iyer, G., Loughlin, D., Nolte, C.G., Smith, S.J., Shiwang, J., and Scovronick, N. “Complexities

in achieving air pollution related equity goals through a net-zero transition in the United States.” *Submitted*.

13. Prest, B.C., Rennels, L., **Errickson, F.C.**, and Anthoff, D. (2024). “Equity weighting increases the social cost of carbon: new government guidelines could transform benefit-cost analysis of U.S. climate policy.” *Science* 385, 715-717. [doi.org/10.1126/science.adn1488](https://doi.org/10.1126/science.adn1488)
12. Rennert, K., **Errickson, F.C.\***, Prest, B., Rennels, L., Newell, R., Pizer, B., Kingdon, C., Wingenroth, J., Cooke, R., Parthum, B., Smith, D., Cromar, K., Diaz, D., Moore, F., Müller, U., Plevin, R., Raftery, A., Ševčíková, H., Sheets, H., Stock, J., Tan, T., Watson, W., Wong, T., and Anthoff, D. (2022). “Comprehensive evidence implies a higher social cost of CO<sub>2</sub>.” *Nature* 610, 687–692. [doi.org/10.1038/s41586-022-05224-9](https://doi.org/10.1038/s41586-022-05224-9)
11. Wong, T.E., Ledna, C., Sheets, H., Rennels, L., **Errickson, F.C.**, Diaz, D., Anthoff, D. (2022). “Sea-level and socioeconomic uncertainty drives high-end coastal adaptation costs.” *Earth’s Future* 10(12), 1-18. [doi.org/10.1029/2022EF003061](https://doi.org/10.1029/2022EF003061)
10. Wong, T.E., Rennels, L., **Errickson, F.C.**, Srikrishnan, V., Bakker, A., Keller, K., Anthoff, D. (2022). “MimiBRICK.jl: A Julia package for the BRICK model for sea-level change in the Mimi integrated modeling framework.” *The Journal of Open Source Software* 7(76), 4556. [doi.org/10.21105/joss.04556](https://doi.org/10.21105/joss.04556)
9. **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, 564-570. [doi:10.1038/s41586-021-03386-6](https://doi.org/10.1038/s41586-021-03386-6)
8. Rennert, K., Prest, B.C., Pizer, W.A., Newell, R.G., Anthoff, D., Kingdon, C., Rennels, L., Cooke, R., Raftery, A.E., Ševčíková, H., **Errickson, F.C.** (2021). “The social cost of carbon: advances in long-term probabilistic projections of population, gdp, emissions, and discount rates.” *Brookings Papers on Economic Activity*. [BPEA Fall 2021 final paper version](#).
7. Budolfson, M.B., Dennig, F., **Errickson, F.C.\***, Feindt, S., Ferranna, M., Fleurbaey, M., Klenert, D., Kornek, U., Kuruc, K., Méjean, A., Peng, W., Scovronick, N., Spears, D., Wagner, F., and Zuber, S. (2021). “Protecting the poor with a carbon tax and equal per capita dividend.” *Nature Climate Change* 11, 1025-1026 (invited Policy Brief). [doi:10.1038/s41558-021-01228-x](https://doi.org/10.1038/s41558-021-01228-x)
6. Budolfson, M.B., Dennig, F., **Errickson, F.C.\***, Feindt, S., Ferranna, M., Fleurbaey, M., Klenert, D., Kornek, U., Kuruc, K., Méjean, A., Peng, W., Scovronick, N., Spears, D., Wagner, F., and Zuber, S. (2021). “Climate action with revenue recycling has benefits for poverty, inequality and well-being.” *Nature Climate Change* 11, 1111-1116. [doi:10.1038/s41558-021-01217-0](https://doi.org/10.1038/s41558-021-01217-0)
5. Budolfson, M.B., Anthoff, D., Dennig, F., **Errickson, F.C.\***, Kuruc, K., Spears, D., and Dubash, N.K. (2021). “Utilitarian benchmarks for emissions and pledges promote equity, climate, and development.” *Nature Climate Change* 11, 827–833. [doi:10.1038/s41558-021-01130-6](https://doi.org/10.1038/s41558-021-01130-6)
4. Scovronick, N., Anthoff, D., Dennig, F., **Errickson, F.C.\***, Ferranna, M., Peng, W., Spears, D., Wagner, F., and Budolfson, M.B. (2021). “The importance of health co-benefits under different climate policy cooperation frameworks.” *Environmental Research Letters* 16(5) 055027. [doi:10.1088/1748-9326/abf2e7](https://doi.org/10.1088/1748-9326/abf2e7)
3. **Errickson, F.C.**, Kuruc, K., and McFadden, J. (2021). “Animal-based foods have high social and climate costs.” *Nature Food* 2, 274-281. [doi:10.1038/s43016-021-00265-1](https://doi.org/10.1038/s43016-021-00265-1)

2. Scovronick, N., Vasquez, V.N., **Errickson, F.C.**, Dennig, F., Gasparrini, A., Hajat, S., Spears, D., Budolfson, M.B. (2019). “Human health and the social cost of carbon: a primer and call to action.” *Epidemiology* 30(5), 642-647. doi:10.1097/EDE.0000000000001057
1. Scovronick, N., Budolfson, M.B., Dennig, F., **Errickson, F.C.\***, Fleurbaey, M., Peng, W., Socolow, R.H., Spears, D., Wagner, F. (2019). “The impact of human health co-benefits on evaluations of global climate policy.” *Nature Communications* 10, 2095. doi:10.1038/s41467-019-09499-x

## Working papers

8. “*Energy, climate and health: air quality co-benefits and global climate justice*”, with Mark Budolfson, Ani Deshpande, Xinyuan Huang, Wei Peng, Noah Scovronick, Fabian Wagner, et al. (in prep. for submission to *Lancet Special Issue on Energy and Health*).
7. “*The climate, health, and equity implications of different pathways to achieving net-zero emissions*”, with Mark Budolfson, Maddalena Ferranna, Xinyuan Huang, Gokul Iyer, Wei Peng, Noah Scovronick, and Fabian Wagner. (invited perspective piece for *Nature Review of Clean Technology*).
6. Young-Brun, M., Dennig, F., **Errickson, F.C.**, Feindt, S., Méjean, A., and Zuber, S. “Different taxes or redistribution: how to shape a just global climate policy?” (*authors listed alphabetically following economics convention*)
5. Rennels, L., **Errickson, F.C.**, Keller, K., Parthum, B., Smith, D., and Anthoff, D. “Considering robustness to deep uncertainties drives more rapid emissions reductions.”
4. **Errickson, F.C.**, Wong, T.E., Keller, K., Rennels, L., and Anthoff, D. “Improved climate modeling reduces extreme social cost of carbon estimates.”
3. Wingenroth, J., Prest, B., Rennels, L., Rennert, K., **Errickson, F.C.**, and Anthoff, D. “Valuing biodiversity loss in the social cost of CO<sub>2</sub>.”
2. Colbert, K.R., **Errickson, F.C.**, Anthoff, D., and Forest, C.E. “Including climate system feedbacks increases the social cost of methane.”
1. Budolfson, M.B., Dennig, F., **Errickson, F.C.\***, Fleurbaey, M., Peng, W., Scovronick, N., and Wagner, F. “Are improvements in air quality a sufficient justification for climate policy?”

## Research in progress

4. *Ranking U.S. climate policies to improve air pollution and health equity*, with Mark Budolfson, Maddalena Ferranna, Simon Lang, Wei Peng, Noah Scovronick, Jinyu Shiwang, and Vivek Srikrishnan.
3. *How to save a million lives?*, with Mark Budolfson, Wei Peng, Noah Scovronick, Jinyu Shiwang, and Fabian Wagner.
2. *Historic warming impacts influence future economic projection uncertainty*, with David Anthoff, Klaus Keller, Vivek Srikrishnan, and Richard Tol.

1. *The climate impacts and social costs of hydrogen leaks*, with Eric Kort, Bryan Parthum, Lisa Rennels, Vivek Srikrishnan.

## Presentations

14. “Valuing the Impacts of Climate Change on Global Fin and Shell Fisheries: Current Approaches & Ways Forward,” 2023 (*scheduled*). Moderator/organizer. *Resources for the Future Social Cost of Carbon Workshops*. Resources for the Future, Washington D.C.
13. “Valuing the Impacts of Climate Change on Coral Reefs: Current Approaches & Ways Forward,” 2023. Moderator/organizer. *Resources for the Future Social Cost of Carbon Workshops*. Resources for the Future, Washington D.C.
12. “Incorporating the Impacts of Climate Change on Ocean Systems into the Social Cost of Carbon: First Steps,” 2023. Organizer. *Resources for the Future Social Cost of Carbon Workshops*. Resources for the Future, Washington D.C.
11. “Understanding Different Metrics for Comparing Relative Impacts from Carbon and Methane Emissions - Which Metric to Use?” 2023. Invited virtual presentation. *Environmental Defense Fund Economics Seminar Series*. Environmental Defense Fund, Washington D.C.
10. “Equity, Climate Uncertainty, and the Social Cost of Carbon,” 2022. Invited virtual presentation. *Marine Policy Center Seminar*. Woods Hole Oceanographic Institution, Woods Hole, MA.
9. “The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates,” 2021. Invited virtual presentation, *Fall 2021 Brookings Papers on Economic Activity conference*. Washington, DC (participant in author discussion session).
8. “Progressive Revenue Recycling can Alleviate Poverty, Reduce Inequality, and Improve Wellbeing While Avoiding Dangerous Climate Change,” 2021. Virtual presentation, *Climate Futures Workshop: Climate Solutions, Money, and Politics*. Princeton University, Princeton, NJ.
7. “Accounting for Deeply Uncertain Temperature and Sea-Level Projections in the Social Cost of Carbon,” 2019. Oral presentation, *Workshop on Climate Policy and Sustainable Growth*. Princeton University, Princeton, NJ.
6. “Climate Uncertainties and the Social Cost of Methane,” 2018. Poster presentation, *Sustainability Research Network Awardees Conference*. National Science Foundation, Washington, DC.
5. “The Network for Sustainable Climate Risk Management (SCRiM): An Overview,” 2018. Oral presentation, *Sustainability Research Network Awardees Conference*. National Science Foundation, Washington, DC (jointly presented with Klaus Keller, Ben Lee, Robert Nicholas, and Nancy Tuana).
4. “The Impact of Human Health Co-Benefits on Evaluations of Global Climate Policy,” 2018. Oral presentation, *European Association of Environmental and Resource Economists Summer School on Climate Change Assessment: Economic Models and Evaluation Criteria*. Fondazione Eni Enrico Mattei, Venice, Italy.
3. “Accounting for Climate Uncertainty,” 2017. Invited oral presentation, *Data Science for the 21st Century (DS421) Seminar*. UC Berkeley, Berkeley, CA.

2. “A Modular Approach to Integrated Assessment Modeling,” 2017. Invited oral presentation, Fondation Maison des Sciences de l’Homme, Paris, France.
1. “Uncertainty and the Social Cost of Methane Using Bayesian Constrained Climate Models,” 2016. Poster presentation, *American Geophysical Union Fall Meeting*. San Francisco, CA.

## Other writings

“*Creating a Data-Driven Ocean Damage Function: A Synthesis of Expert Workshop Recommendations*,” with Brian Prest, Kevin Rennert, and Jordan Wingenroth (in prep as a Resources for the Future Report).

“*Increasing the Representation of Earth System Feedbacks in the Social Cost of Carbon Dioxide*,” with David Anthoff, Brian C. Prest, Kevin Rennert, and Jordan Wingenroth, 2024. (prepared for U.S. Environmental Protection Agency)

“*Public Comment: Updated Estimates of the Social Cost of Methane for Usage in Regulatory Analysis*,” with David Anthoff, Richard G. Newell, William A. Pizer, Brian C. Prest, Lisa Rennels, Kevin J. Rennert, and Jordan Wingenroth, 2022.

“*Furthering Environmental Justice Perspectives in Our Research: Report and Recommendations to Princeton University From the April 2021 Workshop*,” with Nic Choquette-Levy, Sara Constantino, Erin Mayfield, Malini Nambiar, Pooja Ramamurthi, Keely Swan, and Melissa Tier, 2021.

“*Comments on Proposed BLM Rule: Waste Prevention, Production Subject to Royalties, and Resource Conservation - Rescission or Revision of Certain Requirements, 83 Fed. Ref 7924*,” with Andrew Hultgren, 2018.

## Honors and awards

Loker Foundation Graduate Award, UC Berkeley College of Natural Resources (2019).

Data Sciences for the 21st Century (DS421) NSF Fellow: UC Berkeley (2016-2018).

Outstanding Graduate Student Instructor Award, Haas School of Business, UC Berkeley (2015).

Graduate School of Arts and Sciences academic scholarship, Columbia University (2010-2011).

*Undergraduate*: Outstanding Scholars Recruitment Program Scholarship (2005-2009), Edward J. Bloustein Distinguished Scholars Scholarship (2005-2009), Dean’s List (2005-2009).

## Teaching

Graduate student instructor, *The Economics of Climate Change*. Energy and Resources Group, UC Berkeley. (Fall 2015, 2018, 2019 and Spring 2016).

Graduate student instructor, *Microeconomics for Business Decision Making*. Haas School of Business, UC Berkeley. (Fall 2016). Received Outstanding Graduate Student Instructor award.

## Professional development

*Dartmouth Climate Risk Management Summer Fest* (invited participant). Dartmouth College, Hanover, NH (2023).

*European Association of Environmental and Resource Economists Summer School on Climate Change Assessment: Economic Models and Evaluation Criteria*. Fondazione Eni Enrico Mattei, Venice, Italy (2018).

*DS421 Data Visualization & Science Communication Workshop*. UC Berkeley, Berkeley, CA (2017).

*Interdisciplinary PhD Workshop in Sustainable Development*. Columbia University, New York, NY (2017).

*SCRiM Summer School on Sustainable Climate Risk Management*. Pennsylvania State University, State College, PA (2016).

*Summer Workshop in Climate Change Economics - Empirics of Climate Impacts*. UC Berkeley, Berkeley, CA (2015).

## Academic service

### Organized workshops & conferences

*Global Advances in Quantifying and Attributing Climate Impacts and Damages to Support Climate Risk Management* (co-chair). American Geophysical Union Fall Meeting. Washington D.C., (scheduled December 2024).

*Incorporating the Impacts of Climate Change on Ocean Systems into the Social Cost of Carbon (SC-CO<sub>2</sub>)* (co-organizer, three virtual workshop bringing together experts in oceanography, coral reefs, fisheries science, environmental economics, and other related fields to develop best practices for estimating ocean system climate damages). Resources for the Future, Washington D.C. (2023).

*Furthering Environmental Justice Perspectives in Our Research* (co-organizer, virtual workshop). Princeton University, Princeton, NJ (2021).

*Global Perspectives on Sustainable and Just Energy Transitions* (co-chair, oral and poster session). American Geophysical Union Fall Meeting. San Francisco, CA (2019).

### Mentorship & outreach

Mentor, [The Graduate Applications International Network \(GAIN\)](#): *Supporting graduate applicants with the goal of strengthening the pipeline for African students into the economics and public policy profession*. (2023-present).

Mentor, *Columbia University Climate School Alumni Mentoring Program* (2022-present).

Volunteer subject matter expert, *The Jersey City Public Schools Sustainability Science, Technology, Engineering, Arts, and Mathematics (STEAM) Challenge - Environmental Ambassadors* (2021).

Mentor, *Energy and Resources Group New Student Mentorship Program* (2017-2020).

Student organizer, *UC Berkeley Climate Change Economics Lunch Seminar* (2017-2019).

Committee member, *Energy and Resources Group graduate student admissions committee*, UC Berkeley (two admission cycles).

### Reviewer

*Climatic Change, Nature Climate Change, Science, U.S. EPA National Center for Environmental Economics (NCEE) Working Paper Series, WIREs Climate Change*

## Other experience and skills

Consultant, Resources for the Future & U.S. Environmental Protection Agency (2023-2024).  
*Providing technical assistance to incorporate climate tipping points into official U.S. social cost of carbon estimates.*

Consultant, Resources for the Future & U.S. Environmental Protection Agency (2021-2022).  
*Providing technical assistance to implement President Biden's Executive Order 13990, which instructed a new interagency working group to provide revised social cost of carbon estimates*

Research Assistant, Columbia Water Center, Earth Institute at Columbia University (2013).  
Project: *Climate-Informed Global Flood Risk Assessment*

Junior Research Associate, The Nature Conservancy (2011-2012).  
Project: *Ecosystem Based Approaches to Climate Adaptation Policy and Resiliency*

Research Assistant, School of International & Public Affairs, Columbia University (2010-2011).  
Project: *Climate Change, Glacial Loss, and Himalayan Communities*

Computing: Julia, Python, R, Fortran, C++, MATLAB, Git, L<sup>A</sup>T<sub>E</sub>X, Adobe Illustrator.

*Codeveloper*: [Greenhouse Gas Impact Value Estimator \(GIVE\)](#) model, currently used by the U.S. Environmental Protection Agency for their official social cost of greenhouse gas estimates.

Miscellaneous: National Ski Patrol Avalanche Level 1 Training Certification  
NOLS Wilderness Medicine - Wilderness First Aid Certification