

# Adam Michael Bauer

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## Education

### University of Illinois Urbana-Champaign

Doctor of Philosophy in Physics | GPA: 4.000/4.000

Urbana, Illinois

August 2020 — August 2024 (Expected)

**Honors/Activities:** National Science Foundation Graduate Research Fellowship

**Doctoral Thesis:** *On the physical drivers and economic consequences of climate-related risk*

### University of Arizona

B.S. in Physics (with honors); B.S. in Mathematics | GPA: 3.972/4.000 (Summa Cum Laude)

Tucson, Arizona

August 2016 — May 2020

**Honors/Activities:** Excellence in Undergraduate Research Award (College of Science), Galileo Circle Scholar, Weaver Research Award

**Honors Thesis:** *On the behavior of null rays in spherically symmetric spacetimes*

## Areas of Expertise

• Climate science • Environmental economics • Climate policy • Physics • Applied mathematics • Uncertainty and risk analysis • Numerical optimization • Data visualization and analysis • Mathematical modeling • Scientific communication • Technical writing •

**Technical Strengths:** Python (Pyomo, Numba, Xarray, Numpy, Scipy, CVXPY, Matplotlib, Jupyter Notebooks) • Julia • Github • Github

Pages • Microsoft Office • Google Suite • Linux •

## Relevant Work Experience

### The World Bank Group, Climate Change Division

Research Consultant

Washington, D.C.

June 2023 — present

- Lead an independent research effort to compute optimal decarbonization investment strategies across economic sectors.
- Incorporate the influence of climate risk on decarbonization investment strategies utilizing numerical stochastic optimization.
- Convert Intergovernmental Panel on Climate Change working group and US government reports into numerical model components.
- Tailor decarbonization investment model to stakeholder interests and needs.
- Present work to World Bank Group senior management; draft a World Bank Policy Research Working Paper on our results.

### University of Illinois Urbana-Champaign

Graduate Research Fellow, Undergraduate Research Mentor

Urbana, Illinois

August 2020 — present

- Spearhead an independent research effort to elucidate the physical drivers of extreme temperatures.
- Understand climate change projections by leveraging observational data, climate model output, and reanalysis products.
- Probe the underlying physical mechanism of heat waves in the midlatitudes using a land-atmosphere coupled model.
- Mentor an undergraduate researcher to perform uncertainty quantification on future climate projections and extremes.
- Start a weekly journal club that discusses papers on climate science, climate policy, economics, and the clean energy transition.
- Author several papers on our work; present results at conferences on climate change, geosciences, and climate change impacts.

### Columbia Business School & Tamer Center for Social Enterprise

Research Consultant; Staff Associate II in the Faculty of Business

New York, New York

April 2022 — June 2022; September 2022 — December 2022

- Built a financial-economic integrated assessment model that incorporates climate risk into optimal fossil fuel abatement programs.
- Solved high-dimensional financial asset pricing model for fossil fuel emissions taxes using genetic algorithm optimization techniques.
- Analyzed model results with multivariate regression, ensemble methods, and variance decomposition.
- Wrote a set of comments on the US Federal Reserve's guidelines for climate-related risk management for large financial institutions.
- Authored a CESifo Working Paper on our results; presented work at international conferences on environmental and resource economics, climate change, and climate-related risk.

## Selected Publications and Presentations

**Bauer, A. M.** *Financial modeling of climate risk supports stringent mitigation action.* European Association of Environmental and Resource Economists Summer Meeting, Limassol, Cyprus, 2023.

**Bauer, A. M.** *Financial modeling of climate risk supports stringent mitigation action.* Association of Environmental and Resource Economists Summer Meeting, Portland ME, 2023.

**Bauer, A. M.,** C. Proistosescu, G. Wagner. *Carbon Dioxide as a Risky Asset.* CESifo Working Paper No. 10278, 2023.

**Bauer, A. M.,** D. C. Lafferty, K. Schwarzwald, C. Proistosescu, G. Wagner. *Comments on "Principles for Climate-Related Financial Risk Management for Large Financial Institutions".* Docket No. OP-1793, The Federal Reserve, 2023.

**Bauer, A. M.** *The role of local thermodynamics in midlatitude heat waves.* American Geophysical Union Fall Meeting, Chicago, IL, 2022.

**Bauer, A. M., et al.** *Spherical Accretion in Modified Theories of Gravity.* The Astrophysical Journal, 925(2), 2023.

## Leadership and Activities

### University of Illinois Urbana-Champaign

Graduate & Undergraduate Peer Mentor

Urbana, Illinois

August 2020 — present

- Work with fellow graduate students to ease their transition into our graduate program; assist in finding research mentors.
- Guide undergraduate students to educational resources, mental health services, and other tools to ensure their success.