

## Patrick T. Brown

Trend Analytics,  
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## BIOGRAPHY

Dr. Brown is a PhD climate scientist. He is the Head of Climate Analytics at Interactive Brokers, is an adjunct faculty member (lecturer) of the Energy Policy and Climate Program at Johns Hopkins University and a senior fellow at The Breakthrough Institute. His research and teaching focus on the physical and economic impacts of extreme weather under climate change.

He has published papers in *Nature*, *PNAS*, and *Nature Climate Change*, as well as many other journals and his research and commentary have appeared in *The New York Times*, *The Wallstreet Journal*, *CNBC*, *CNN*, *The BBC*, *The Washington Post*, *NPR*, *Newsweek*, *The Guardian*, *The Atlantic*, *Foreign Policy*, and *The Los Angeles Times* among other places.

## EDUCATION

### CARNEGIE INST. FOR SCIENCE AT STANFORD UNIVERSITY (2017 - 2019)

Postdoctoral Research Fellow, Department of Global Ecology

### DUKE UNIVERSITY (2012 - 2016)

Doctor of Philosophy (PhD), Department of Earth and Ocean Sciences

### SAN JOSÉ STATE UNIVERSITY (2009 - 2012)

Master of Science (MS), Department of Meteorology and Climate Science

### UNIVERSITY OF WISCONSIN - MADISON (2004 - 2008)

Bachelor of Science (BS), Atmospheric and Oceanic Sciences

## PROFESSIONAL EXPERIENCE AND AFFILIATIONS

- **Trend Analytics, Interactive Brokers**
  - Head of Climate Analytics, March 2025 – Present
- **The Breakthrough Institute**
  - Senior Fellow, March 2025 – Present
  - Co-director, Climate and Energy Program, May 2022 – February 2025
- **Johns Hopkins University**
  - Adjunct Faculty (Lecturer), Energy Policy and Climate Program, January 2022 – Present

- **Wildfire Interdisciplinary Research Center (WIRC), San José State University**
  - Visiting Research Professor, August 2022 – Present
  - Climate Scientist, August 2020 – August 2022
- **San José State University**
  - Assistant Professor, Department of Meteorology and Climate Science, August 2019 – August 2022
- **ClimateAI**
  - Innovation Lead, March 2018 – July 2019
- **Carnegie Institution for Science, Stanford University**
  - Postdoctoral Research Fellow
  - Advisor: Ken Caldeira
- **Duke University**
  - Research Assistant, August 2012 – December 2016
  - Dissertation: The magnitude and mechanisms of unforced variability in global surface temperature. Video summary
  - Committee: Wenhong Li (Advisor), M. Susan Lozier, Drew Shindell, Paul Baker, Yi Ming
- **NASA Jet Propulsion Laboratory (JPL)**
  - Graduate Fellowship Program Intern, summer 2016
  - Graduate Fellowship Program Intern, summer 2014
- **NOAA Geophysical Fluid Dynamics Laboratory (GFDL)**
  - Research Associate, summer 2015
- **Environmental Resources Management (ERM)**
  - Staff Scientist – Climate modeling adviser, October 2014 – February 2015
- **San Jose State University**
  - Research Assistant, August 2009 – August 2012
  - Master's Thesis: Reproduction of Twentieth Century Intradecadal to Multidecadal Surface Temperature Variability in Radiatively Forced Coupled Climate Models
- **Climate Clock Initiative**
  - Climate Science Advisor, April 2011 – August 2011
- **Weather Central, LLC / MyWeather, LLC**
  - Forecaster / Graphics Technician / Customer Support / Market Research / Data Entry, December 2008 – August 2009
- **NASA Langley Research Center (LaRC)**
  - Meteorology Intern, summer 2007
- **NASA Goddard Spaceflight Center (GSFC)**
  - Atmospheric Science Intern, summer 2006

# PUBLICATIONS

\*\* Cited in the Intergovernmental Panel on Climate Change's (IPCC) Comprehensive 6<sup>th</sup> Assessment Report (2021 & 2022).

- **Brown, P.T.**, Strenfel, S.J., Bagley, R.B., Clements, C.B. The Potential for Fuel Reduction to Reduce Wildfire Intensity in a Warming California (2025). *Environmental Research Letters*, doi: [10.1088/1748-9326/adab86](https://doi.org/10.1088/1748-9326/adab86)
  - [American Meteorological Society's annual meeting presentation on research](#)
  - [Operational version of described model](#)
- **Brown, P. T.** (2024) Cost-effectiveness of Large-Scale Fuel Reduction for Wildfire Mitigation in California. *The Breakthrough Institute*, JSTOR, <http://www.jstor.org/stable/resrep60733>
  - [X Thread on Research](#)
- **Brown, P. T.**, H. Hanley, A. Mahesh, C. Reed, S. J. Strenfel, S. J. Davis, A. K. Kochanski, C. B. Clements (2023) Climate warming increases extreme daily wildfire growth risk in California. *Nature*, doi: [10.1038/s41586-023-06444-3](https://doi.org/10.1038/s41586-023-06444-3)
  - [X Thread on Research](#)
  - [Follow up critique of high-impact scientific publishing in climate science](#)
- **Brown, P. T.** (2023) When the fraction of attributable risk does not inform the impact associated with anthropogenic climate change. *Climatic Change*, doi: [10.1007/s10584-023-03591-4](https://doi.org/10.1007/s10584-023-03591-4)
  - [Blog post on research](#)
  - [X thread on research](#)
- \*\***Brown, P. T.**, K. Caldeira (2017) Greater future global warming inferred from Earth's recent energy budget. *Nature*, doi:[10.1038/nature24672](https://doi.org/10.1038/nature24672).
  - [Blog post on research](#).
  - [Stanford EE-CS colloquium presentation on research](#).
- \*\***Brown, P. T.**, M. Stolpe, K. Caldeira (2018) Assumptions for Emergent Constraints. *Nature*, doi:[10.1038/nature25450](https://doi.org/10.1038/nature25450)
  - [Blog post on research](#).
- **Brown, P. T.**, D. S. Farnham, K. Caldeira (2021) Meteorology of Historical Weekly Wind and Solar Power Resource Droughts over Western North America in ERA-5. *Springer-Nature Applied Sciences*. doi: [10.1007/s42452-021-04794-z](https://doi.org/10.1007/s42452-021-04794-z)
  - [Twitter thread on research](#)
- Caldeira, K., **P. T. Brown** (2019) Reduced emissions through climate damage to the economy. *PNAS*, doi:[10.1073/pnas.1819605116](https://doi.org/10.1073/pnas.1819605116)
- \*\***Brown, P. T.**, H. Saunders (2020) Approximate Calculations of the Net Economic Impact of Global Warming Mitigation Targets Under Heightened Damage Estimates. *PLOS ONE*.

[doi:10.1371/journal.pone.0239520](https://doi.org/10.1371/journal.pone.0239520)

- [AGU interview on research](#)
  - [Twitter thread on research](#)
  - Primer: [fundamental economics and the costs and benefits of addressing climate change](#)
- **\*\*Brown, P. T.**, J. Moreno-Cruz, K. Caldeira (2020) Break-even year: a concept for understanding intergenerational trade-offs in climate change mitigation policy. *Environmental Research Communications*. [doi:10.1088/2515-7620/abb413](https://doi.org/10.1088/2515-7620/abb413)
  - [Twitter thread on research](#)
- **\*\*Brown, P. T.**, Y. Ming, W. Li, S. A. Hill (2017) Change in the magnitude and mechanisms of global temperature variability with warming. *Nature Climate Change*, [doi:10.1038/nclimate3381](https://doi.org/10.1038/nclimate3381).
  - [AGU talk summarizing the research](#)
- **\*\*Brown, P. T.**, W. Li, L. Li, Y. Ming (2014) Top-of-Atmosphere Radiative Contribution to Unforced Decadal Global Temperature Variability in Climate Models. *Geophysical Research Letters*, [doi:10.1002/2014GL060625](https://doi.org/10.1002/2014GL060625).
  - [Blog post on the research](#).
- **\*\*Brown, P. T.**, M. S. Lozier, R. Zhang, W. Li (2016) The necessity of cloud feedback for a basin-scale Atlantic Multidecadal Oscillation. *Geophysical Research Letters*, [doi:10.1002/2016GL068303](https://doi.org/10.1002/2016GL068303).
  - [Blog post on the research](#).
- **\*\*Brown, P. T.**, W. Li, J. H. Jiang, H. Su (2016) Spread in the magnitude of climate model interdecadal global temperature variability traced to disagreements over high-latitude oceans. *Geophysical Research Letters*, [doi:10.1002/2016GL071442](https://doi.org/10.1002/2016GL071442).
  - [Blog post on the research](#).
- **\*\*Brown, P. T.**, W. Li, S. P. Xie (2015) Regions of Significant Influence on Unforced Global Mean Surface Temperature Variability in Climate Models. *Journal of Geophysical Research-Atmospheres*, [doi: 10.1002/2014JD022576](https://doi.org/10.1002/2014JD022576).
- **Brown, P. T.**, W. Li, J. H. Jiang, H. Su (2016) Unforced surface air temperature variability and its contrasting relationship with the anomalous TOA energy flux at local and global spatial scales. *Journal of Climate*, [doi:10.1175/JCLI-D-15-0384.1](https://doi.org/10.1175/JCLI-D-15-0384.1).
  - [Technical blog post on the research](#).
  - [Plain English blog post on the research](#).
- **Brown, P. T.**, & Caldeira, K. (2020) Empirical prediction of short-term annual global temperature variability. *Earth and Space Science*, 7, e2020EA001116. [doi:10.1029/2020EA001116](https://doi.org/10.1029/2020EA001116)
  - [Live global temperature forecast](#)
- **Brown, P. T.** (2016) Reporting on global warming: A study in headlines, *Physics Today*, [doi:10.1063/PT.3.3310](https://doi.org/10.1063/PT.3.3310).
  - [‘Director’s cut’ blog post](#).
- **Brown, P. T.** (2016) What do historical temperature records tell us about natural variability in global temperature?, *Climanosco*, 24 Aug. 2016.
  - placed [2nd overall](#) in the Climanosco launch challenge)



- **Brown, P.T.**, W. Li, E.C. Cordero, S.A. Mauget (2015) Comparing the model-simulated global warming signal to observations using empirical estimates of unforced noise. *Scientific Reports*, doi:10.1038/srep09957.
  - [Blog post on the research.](#)
- Foster, G., **P.T. Brown** (2014) Time and Tide: The Analysis of Sea Level Time Series. *Climate Dynamics*, doi: 10.1007/s00382-014-2224-3.
- **Brown, P.T.**, E.C. Cordero, S.A. Mauget (2012) Reproduction of 20<sup>th</sup> Century Intradecadal to Multidecadal Surface Temperature Variability in Radiatively Forced Coupled Climate Models. *Journal of Geophysical Research – Atmospheres*, doi:10.1029/2011JD016864.
- Mauget S.A., E.C. Cordero, **P.T. Brown** (2011) Evaluating Modeled Intra- to Multidecadal Climate Variability Using Running Mann-Whitney Z Statistics. *Journal of Climate*, doi:10.1175/JCLI-D-11-00211.1.

#### Theses/Capstones Chaired / Advised on

- Blake, D. J. (2024) [THE FUTURE OF CLIMATE CHANGE IMPACTS ON THE AVIATION INDUSTRY: A PREDICTION](#)
- Struijk, F. M. H. (2024) [CAN FORMULA ONE EXIST IN A NET ZERO WORLD?](#)
- Turner, E. (2023) [The Potential for Hazardous Fuel Reduction Treatments to Produce Net Economic Benefits in California](#)
- Hanley, H. S. (2022) Environmental Influences on Large Daily Wildfire Growth in California. doi:10.31979/etd.5znn-tm8p
- Sunvold, D. (2022) An Empirical Assessment of Environmental Variable Combinations for Use in Fire Weather Forecasts doi:10.31979/etd.chd6-2sks
- Purdy, S. (2020) Fire Weather Associated with the 2019 Northern California Public Safety Power Shutoff Events. doi:10.31979/etd.w9ez-52xy
- Bergerson, J. K. (2021) The Influence of Teleconnection Patterns on Renewable Energy Resources. doi:10.31979/etd.g7v8-qp25

## OUTREACH: MEDIA MENTIONS CONTRIBUTIONS AND INTERVIEWS

### General

- PBS Energy Switch: Extreme Weather and Climate Change
- CNBC Power Lunch: [How researchers are using A.I. to predict wildfire danger](#)
- New York Times:
  - [You Don't Get Disasters Like the Palisades Fire Without Human Failure](#)
  - [Reckoning With the Scale of California Wildfires](#)
  - [Come for the Golden Gate Bridge and Cable Cars. Stay for the Summer Shivers.](#)
  - [How Did the Park Fire Get So Big, So Fast?](#)
  - [This Summer Is Pointing Us Toward Uncharted Territory](#)
- CNN, United Shades of America: [California Wildfires](#)
- LA Times: [Could better brush clearance have helped slow the spread of the Palisades fire?](#)
- The Economist: [How will calamity change Los Angeles?](#)

- ABC News: [Smoke from climate-fueled wildfires contributed to thousands of US deaths over 15 years, study says](#)
- BBC World New TV:
  - 2022 UK Heatwave
  - Climate Change and Wildfires
- BBC Radio:
  - [Climate Change in 2020](#)
  - [California wildfires: climate change vs. forest management](#)
- Euronews tonight: [Climate Crisis](#)
- Washington Post: [The most accurate climate change models predict the most alarming consequences, study finds](#)
- Newsweek: [GLOBAL WARMING: OUR MOST DIRE PREDICTIONS FOR THE FUTURE OF THE PLANET ARE PROBABLY RIGHT](#)
- Huffington Post: [Decisions on Nuclear Plant Construction, FERC Directive Could Affect Grid's Generation Sources](#)
- The Guardian: [Scientists have beaten down the best climate denial argument](#)
- AP: [Smoke from climate-fueled wildfires contributed to thousands of US deaths over 15 years, study says](#)
- New Scientist: [Polar vortex is set to drive record cold temperatures in the US](#)
- MIT Technology Review: [Global Warming's Worst-Case Projections Look Increasingly Likely](#)
- Vice News: [Earth Will Likely Be Much Warmer in 2100 Than We Anticipated, Scientists Warn](#)
- Yahoo News: [Global Warming: Our Most Dire Predictions for the Future of the Planet Are Probably Right](#)
- StosselTV: [Climate Censors](#)
- ABC News San Francisco
  - [CA households could prevent blackouts by reducing energy use by 25%, expert says](#)
  - [2022 Wildfire Season](#)
  - [Air quality dramatically worsens in the Bay Area](#)
  - Heatwave 9/6/2022 – 2X
- NBC Bay Area
  - [Why wildfire fuels matter more in a warming climate](#)
  - [Climate in Crisis: AI and wildfire detection](#)
- On [Free Press Essay Critique](#) of High-Impact Scientific Publishing in Climate Science
  - Coverage
    - The Wall Street Journal: [How 'Preapproved Narratives' Corrupt Science](#)
    - The Atlantic: [The Peer-Review Dilemma](#)
    - The Washington Post: [What happened when a scientist denounced his own climate change research.](#)
    - The Los Angeles Times: [A climate scientist wanted to start a debate in academia. He set off a bigger firestorm](#)
    - Discussed in U.S. Senate Hearing of the Committee on the Budget: [Bottlenecks and Backlogs: How Climate Change Threatens Supply Chains](#)
  - Written Interviews
    - Tempi [A terrible climate \(for freedom of research\)](#)
    - Committee for Academic Freedom: [Three top climate scientists make claims of bias at major scientific institutions](#)
    - Committee for Academic Freedom: [Publication, Conformity, Climate Science](#)
  - Podcast Interviews

- [UnHerd](#)
- [The Gist](#)
- [Power Hungry](#)
- [Andrew Revkin's Sustain What](#)
- [The Tudor Dixon Podcast](#)
- Follow-ups
  - Talk: [The Social Feedback Loop that puts Blinders on Climate Science](#)
  - [Correcting the Record Regarding My Essay in The Free Press](#)
  - Middlebury College Public Event: [Has Climate Science Become Distorted by Politics?](#)
  - The Chronicle of Higher Education: [Does High-Profile Climate Science Tell the Full Story?](#)
  - The Chronicle of Higher Education: [Letter Critical of Essay on Climate Research Failed to Refute Anything](#)
- CBS News San Francisco
  - [Heat Spikes Becoming More Common As Climate Change Accelerates](#)
  - [Climate Change Means Bay Area Keeps Getting Warmer, Drier](#)
  - KCBS In Depth: [San Jose State Climate Scientist Peers into California's Wildfire Future](#)
  - [Climate change has far-reaching effects. And the economy is no exception.](#)
  - Heatwave 9/6/2022 – 2X
- Fox 2 News San Francisco: heatwave 9/6/2022
- San Jose Mercury News: heatwave 9/6/2022
- NBC Sacramento: Heatwave 9/6/2022
- KPFA Upfront: [Wildfire Season 2021](#)
- Quillette: [Empiricism and Dogma: Why Left and Right Can't Agree on Climate Change](#)
- MIT Technology Review: [The world's most powerful supercomputer is tailor made for the AI era](#)
- KSBW: [Forecasting our Future: Climate and weather tell 2 different stories](#)
- KRON 4: [San Jose's water system threatened by climate change, Valley Water director says](#)
- The Johns Hopkins News Letter: [FAS and SNF Agora host debate on responses to climate change with Amali Tower and Patrick Brown](#)
- New Scientist: [Extreme California wildfires may increase 57% even with low emissions.](#)
- Yahoo! on a 2019 US Heatwave: [America will roast for 4 days.](#)
- WhoWhatWhy: [At COP26, Nations Still Have to Do the Heavy Lifting to Mitigate Climate Change](#)
- MindBodyGreen: [A Climate Expert On How The California Wildfires Got This Bad](#)
- Univision: [California Drought 2021](#)
- Duke Environment Magazine: [THE COMMUNICATION DILEMMA: PhD Student Patrick Brown Discovers Just How Quickly Climate Change Results Can be Misconstrued](#)
- GreenBiz: [Climate scientists can take this one action to accelerate solutions for climate change](#)
- Gizmodo: [The Most Insane Claims From the Climate Conspiracy Manual Just Sent to Thousands of Teachers.](#)
- San Jose Inside: [Sheltering in Place Has Vastly Improved Region's Air Quality—But How Long Will It Last?](#)
- San Francisco KRON-4: [Expert says climate change, human behavior responsible for historic California wildfires.](#)
- Axios: [Why climate change is a time bomb](#)

- Radio Ecoshock: [Will climate damage slow down the killer economy?](#)
- Inside Climate News: [The Most Accurate Climate Models Predict Greater Warming, Study Shows](#)
- Business Insider: [The world may actually get 15% hotter than scientists previously thought by the end of the century](#)
- Futurism: [The IPCC May Have Underestimated Future Warming Trends](#)
- Radio/podcast Interviews
  - Challenging Climate: [Patrick Brown on extreme weather and the obvious climate strategy](#)
  - Hubwonk by the Pioneer Institute: [Climate Death Toll: Will A Warming World Overwhelm Human Resiliency?](#)
  - Big Conversations with Mike Lee: [THE GLOBAL WARMING DEBATE - SHOULD POOR NATIONS CONTINUE TO USE FOSSIL FUELS FOR DEVELOPMENT?](#)
  - The Glenn Show: [Costs now, possible benefits for our grandkids](#)
  - The Detail Podcast: [How bad is climate change?](#)
  - Americans for Nuclear Energy Podcast: [Bridging the Political Divide on Climate Science](#)
  - Nature Podcast: [Sensitive to carbon dioxide](#)
  - Radio Ecoshock: [Science of the Nasty Future](#)
  - Radio NZ, Checkpoint: [New study puts climate change projections in doubt](#)
  - Radio WFHB: [Eco Feature](#)

### **Climate Feedback**

- [Video promoted by John Stossel for Earth Day relies on incorrect and misleading claims about climate change](#)
- [Video from PragerU makes several incorrect and misleading claims about climate change](#)
- [2°C is not known to be a “point of no return”, as Jonathan Franzen claims](#)
- [Prediction by Extinction Rebellion’s Roger Hallam that climate change will kill 6 billion people by 2100 is unsupported](#)
- [Financial Post commentary misleads about warming effect of greenhouse gas emissions by cherry-picking studies](#)
- [Incorrect claim that global warming is mostly natural was based on a study that can’t support that conclusion](#)
- [Breitbart misrepresents research from 58 scientific papers to falsely claim that they disprove human-caused global warming](#)
- [Energy Secretary Rick Perry incorrectly claims CO2 is not primary cause of climate change](#)
- [Breitbart falsely claims 58 studies refute human-caused global warming](#)
- [Natural variability can not explain modern global warming, as Heartland Institute report claims](#)
- [Heartland Institute report’s claim that climate models are too sensitive to CO2 does not reflect evidence](#)
- [New York Times’ news coverage of 2016 global temperature data was an accurate summary](#)

### **On Climate Change and Wildfires**

- [Over 70 News Stories including:](#)
  - NPR: [Climate change makes wildfires in California more explosive](#)
  - Yahoo News: [Climate change boosts risk of extreme wildfires 25%: study](#)
  - The Manila Times: [Climate change raises wildfire risk by 25%](#)
  - The Japan Times: [Climate change boosts risk of extreme wildfires 25%, study finds](#)

- CBS Radio San Francisco: [Ask and Expert: On staying better protected, prepared and informed on wildfires](#)
- A Big Sur Podcast: [We Choose to Reduce Wildfire Danger, Not Because it is Natural but Because it is Good](#)
- Slow Boring: [A better approach to forest management](#)
- Holt Hanley Youtube: [Cost-Effectiveness Of Large-Scale Fuel Reduction for Wildfire Mitigation in California](#)
- The Smokey Wire: [Cost-Effectiveness Of Large-Scale Fuel Reduction for Wildfire Mitigation in California](#)
- NBC Bay Area: [Climate in Crisis: AI and wildfire detection](#)

#### **On changes in global temperature variability with warming**

- Science Daily: [Warmer world may bring more local, less global, temperature variability](#)
- Science Newline: [Warmer World May Bring More Local, Less Global, Temperature Variability](#)
- Phys.org: [Warmer world may bring more local, less global, temperature variability](#)
- Nature: [Climate variability: Picking apart climate models.](#)

#### **On the stability of unforced global temperature**

- SciWorks Radio: [Understanding Human-Driven Climate Change](#)
- TechTimes: [Long-Term Global Warming Not Unpredictable, Needs External Drivers: Study](#)
- Christian Science Monitor: [Did the climate spin out of control on its own?](#)
- NASA Jet Propulsion Laboratory News: [Long-Term Global Warming Needs External Drivers](#)
- The Economic Times: [Global warming not driven by natural forces: Study](#)
- Duke Chronicle: [Researchers work with NASA to explain causes of global warming](#)

#### **On the pace of global warming over the beginning of the 21st century**

- Real Climate: [Global warming and unforced variability: Clarifications on recent Duke study](#)
- Media Matters: [9 Times Scientific Researchers Stood Up To Right-Wing Media For Distorting Their Climate Studies](#)
- Accuweather: [Middle-of-the-Road Warming Scenario Most Likely, according to New Study](#)
- Science Daily: [Global warming more moderate than worst-case models, empirical data suggest](#)
- Media Matters: [Duke Researcher Denounces Rush Limbaugh's "Ridiculous" Distortion Of His Global Warming Study](#)

#### **On the origin of unforced variability in climate models**

- Science Daily: [Climate models disagree on why temperature 'wiggles' occur](#)
- Science World Report: [Climate Models Conflict When it Comes to Explaining Temperature 'Wiggles'](#)
- Reporting Climate Science: [Climate models disagree on why temperature wiggles occur](#)
- Space Daily: [Climate models disagree on why temperature wiggles occur](#)
- Neue Zuercher Zeitung (Swiss newspaper)

#### **On the causes of unforced variability in climate models**

- Climate Lab Book: [Top-of-atmosphere contribution to unforced variability in global temperature](#)
- And Then There's Physics: [Oh no, now I need to eat my words!](#)

**WRITING FOR THE BREAKTHROUGH INSTITUTE**

- [Articles](#)
- [Blogs](#)
- [Twitter](#)

## TEACHING EXPERIENCE

- **Johns Hopkins University, Energy Policy and Climate (EPC) Program, Advanced Academic Programs**
  - Adjunct Faculty, Lecturer, Spring 2022 – present
    - 425.602 – Science of Climate Change and Its Impact
- **San José State University**
  - Assistant Professor, Fall 2019 – Spring 2022
    - Meteorology 116 – Economic Impact of Extreme Weather Under Climate Change (1 semester)
    - Meteorology 171 – Synoptic Weather Analysis and Forecasting (2 semesters)
    - Meteorology 168 – Global Climate Change (5 semesters)
    - Meteorology 12 – Global Warming: Science and Solutions (3 semesters)
- **Duke University**
  - Teaching Assistant, August 2012 – December 2016
    - Earth and Ocean Sciences 355 – Global Warming
    - Earth and Ocean Sciences 511 – The Climate System (2 semesters)
    - Earth and Ocean Sciences 508 – Climate History
    - Earth and Ocean Sciences 365 – Weather and Climate
    - Earth and Ocean Sciences 12 – The History of Life and Earth
    - Earth and Ocean Sciences 101 – The Dynamic Earth
- **Duke Kunshan University** (Kunshan, Jiangsu Province, China)
  - Instructor, Fall 2015
    - Earth and Ocean Sciences 366 – Climate Change and Society in China
- **San Jose State University**
  - Instructor, August 2010 – June 2012
    - Meteorology 12 – Global Warming: Science and Solutions (Sole Instructor, 4 semesters)
    - Meteorology 173 – Global Climate Modeling (Lab Instructor, 1 semester)

## ADVISING, MENTORSHIP & SERVICE

- **San José State University Service**
  - College of Science Curriculum Committee, 2019 – 2022
  - Undergraduate Major Advisor, Department of Meteorology and Climate Science, 2020
  - Hiring committee, wildfire science, 2020
  - Hiring committee, climate and air quality, 2021
- **Johns Hopkins University Advising**

- **Master's Capstone Advisor**
  - Erica Turner, M.A., 2023
  - David Blake, M.A., 2024
  - Fay Struijik, M.A., 2024
  - Amber Copeland, M.A., 2024
  - DeAnna Colglazier, M.A., 2025
  - Brody Droppleman, M.A., 2025
- **San José State Advising**
  - **Project Scientist Advisor**
    - Pardeep Pall 2021
  - **Master's Thesis Advisor**
    - Kyle Bergerson, M.S. 2021
    - Daniel Sunvold, M.S. 2022
    - Holt Hanley, M.S. 2022
    - Howard Tang, M.S., 2023
  - **Master's Thesis committee member**
    - Scott Purdy, M.S. 2020
  - **Undergraduate Senior Thesis Advisor**
    - Juan Zuniga, B.S. 2020
    - Cameron Landfield, B.S. 2022
  - **Undergraduate Research Advisor**
    - Howard Tang

## REVIEW SERVICES

### Assessment Reports:

- Expert Reviewer: IPCC Sixth Assessment Report Working Group I
- Expert Reviewer: IPCC Special Report of global warming of 1.5C

### Scholarly Journals:

- Nature
- Nature Climate Change
- Nature Communications
- Nature Geoscience
- Journal of Climate
- Climate Dynamics
- Geophysical Research Letters
- Climatic Change
- Fire
- International Journal of Wildland Fire
- Earth's Future
- Journal of Geophysical Research – Atmospheres
- Oceanography
- Global and Planetary Change
- Journal of Applied Meteorology and Climatology
- Journal of Atmospheric and Solar-Terrestrial Physics
- Earth and Space Science

- Earth System Dynamics
- Health Science Reports
- International Journal of Environmental Research and Public Health

Miscellaneous:

- Contributor to Climate Feedback

## CONFERENCE PRESENTATIONS

- **Heterodox Academy Conference**
  - Breaking the Social Feedback Loops that Constrain Climate Science (6/2025)
- **American Geophysical Union (AGU) fall meeting**
  - Wind and Solar Droughts over western North America (12/2020)
  - Teleconnections' influence on wind power over Western North America (Presented by advisee Kyle Bergerson, 12/2020)
  - Skillful empirical prediction of high-impact temperature deviations (12/2019)
  - Net costs associated with various temperature stabilization targets under heightened estimates of economic damage from climate change (12/2018)
  - Change in the Magnitude and Mechanisms of Global Temperature Variability with Warming (12/2017)
  - The necessity of cloud feedback for a basin-scale Atlantic Multidecadal Oscillation (12/2016 – Presented by 2nd author Susan Lozier)
  - Unforced surface air temperature anomalies and their opposite relationship with the TOA energy imbalance at local and global scales (12/2015)
  - Regions of Significant Influence on Unforced Global Mean Surface Air Temperature Variability in Climate Models (12/2014)
  - Global Temperature Change Associated with Unforced Top-of-Atmosphere Net Radiation Variability (12/2013)
  - Past Unforced Surface Temperature Variability and its Implication on Contemporary Climate Change (12/2012)
  - Role of Unforced Multidecadal Variability on 21st Century Surface Temperature Projections (12/2011)
  - Assessing inter- to multi-decadal variability in climate models (12/2010)
- **American Meteorological Society (AMS) annual meeting**
  - The Potential for Fuel Reduction to Reduce Wildfire Intensity in a Warming California (1/2025)
  - Skillful Empirical Prediction of High-Impact Temperature Deviations (1/2020)
  - Role of Unforced Multidecadal Variability on 21st Century Surface Temperature Projections (1/2012)
  - An Evaluation of Surface Temperature Variability in CMIP5 Simulations (1/2012)
  - Assessing inter- to multi-decadal variability in climate model's (1/2011)
- **19th International European Forum (Igls-Forum) on System Dynamics and Innovation in Food Networks: Science Meets Reality (2/2024)**
  - The Social Feedback Loop that Puts Blinders on Climate Science
- **25th Clouds and the Earth's Radiant Energy System (CERES) Science Team Meeting**
  - Unforced surface air temperature variability and its contrasting relationship with the anomalous TOA energy flux at local and global spatial scales. (4/2016)
- **World Climate Research Program Workshop on CMIP5 Model Data Analysis (3/2012)**



- An evaluation of unforced multidecadal surface temperature variability present in CMIP5 models
- Unforced Multidecadal Surface Temperature Variability in Observations and its Implications on 20th/21st Century Climate Change
- **CLIVAR Workshop: Using Paleo-Climate Model/Data Comparisons to Constrain Future Projections (3/2012)**
  - Unforced Multidecadal Surface Temperature Variability in Observations and its Implications on 20th/21st Century Climate Change

## MISCELLANEOUS TALKS- SCIENTIFIC AUDIENCE

- **Columbia University (Lamont-Doherty Earth Observatory) Ocean and Climate Physics Seminar (10/2024)**
  - Do climate adaptation strategies get enough attention? The case of wildfires in California
- **City College of New York Earth and Atmospheric Sciences Seminar (10/2024)**
  - Do climate adaptation strategies get enough attention? The case of wildfires in California
- **United States Congressional Western Caucus Briefing on Fuels Reduction for Wildfire Mitigation and NEPA Reform (7/2024)**
- **SRM360 Panel on Wildfires, Climate Risk & Solar Geoengineering Panel (8/2025)**
- **The Breakthrough Dialogue (6/2024)**
  - On Climatism
- **ConservAmerica Webinar (11/2023)**
  - Strategies for Effective Wildfire Management
- **Office of Energy Infrastructure scoping meeting (7/2023)**
  - Climate Change and Fire Risk-Consequence Modeling
- **UC Berkeley Science Communication Lecture (11/2022)**
  - Climate Communication in an Era of Extremes
- **Stanford University Department of Electrical Engineering and Computer Systems Colloquium (1/2018)**
  - Combining Physical and Statistical Models in Order to Narrow Uncertainty in Projected Global Warming
- **Princeton / GFDL Public Seminar (6/2015)**
  - Unforced Surface Temperature Variability and its Relationship with the Top-of-Atmosphere Energy Balance in CMIP5 Models
- **NASA Jet Propulsion Laboratory (JPL) seminars**
  - Unforced surface air temperature variability and its contrasting relationship with the anomalous TOA energy flux at local and global spatial scales (7/2016)
  - Top-of-atmosphere radiative feedbacks in the context of unforced interdecadal temperature variability (7/2014)
- **Lawrence Berkeley National Laboratory (LBNL) Seminar Series (8/2017)**
  - Change in the magnitude and mechanisms of global temperature variability with warming
- **Lawrence Livermore National Laboratory (LLNL) Climate and Weather Seminar Series (2/2017)**

- Change in the magnitude and mechanisms of global temperature variability with warming
- **Carnegie Institution for Science, Stanford University (1/2017)**
  - Do propagation of error calculations invalidate global climate model projections?
- **Duke Seminars**
  - Magnitude and Mechanisms of Unforced Global Mean Surface Air Temperature Variability (2/2015)
  - Regions of Significant Influence on Unforced Global Mean Surface Air Temperature Variability in Climate Models (12/2014)
  - Top-of-Atmosphere Radiative Contribution to Unforced Decadal Global Temperature Variability in Climate Models (3/2014)
  - Unforced Surface Temperature Variability in Observations and its Implication on Contemporary Climate Change (10/2012)
- **Office of Energy Infrastructure Safety, Wildfire Risk Modeling Working Group (8/2022)**
  - Climate Driven Risk of Extreme Wildfire Behavior in California
- **Woods Hole Oceanographic Institution (WHOI) Physical Oceanography Seminar (1/2021)**
  - Meteorology and Climatology of Wind and Solar Power Droughts over Western North America
- **University of Rhode Island Graduate School of Oceanography Seminar (2/2021)**
  - Meteorology and Climatology of Wind and Solar Power Droughts over Western North America
- **CSU – BW: Climate Change and Water (12/2019)**
  - An empirical methodology that forecasts deviations in the distributions of land temperatures on season timescales that impact agricultural productivity, outdoor labor productivity, electricity demand, and human mortality
- **Association for Computing Machinery (ACM) meetup hosted at PayPal HQ (6/2018)**
  - Combining Physical and Statistical Models in Order to Narrow Uncertainty in Projected Global Warming
- **Chinese Academy of Sciences (11/2015)**
  - Unforced Surface Temperature Variability and its Relationship with the Top-of-Atmosphere Energy Budget
- **Atmospheric Sciences Symposium at UC Berkeley (2/2012)**
  - Role of Unforced Multidecadal Variability on 21st Century Surface Temperature Projections
- **NASA Langley Research Center intern presentations (8/2007)**
  - The Saharan Air Layer's interaction with tropical waves during the NAMMA time period
- **NASA Goddard Spaceflight Center intern presentations (8/2006)**
  - The Calibration of Water Vapor Profiles Produced from LIDAR Instrumentation
- **San José State University Seminars**
  - Unforced Surface Temperature Variability in Observations and its Implication on Contemporary Climate Change (3/2012)
  - Reproduction of Intradecadal to Multidecadal Surface Temperature Variability in Radiatively Forced Coupled Climate Models (3/2012)
  - The State of Climate Science: From Recent Observations to 'Climategate' (4/2010)
    - This presentation can be viewed in three parts [here](#), [here](#) and [here](#).

# OUTREACH: MISCELLANEOUS TALKS FOR A GENERAL AUDIENCE

- **Sonoma Valley Authors Festival (5/2025)**
  - A Critical Look at Climate Catastrophism *Striving for a clearer understanding of climate risks*
- **Johns Hopkins Foreign Affairs Symposium (3/2023)**
  - Debate: Climate Change will Cause a Substantial Increase in Forced Migration over Time
- **Johns Hopkins University Energy Policy and Climate Program Seminar (2/2024)**
  - Does High Profile Science Tell the Full Story on the Climate Problem?
- **Middlebury College Event: Has Climate Science Become Distorted by Politics? (11/2023)**
  - The Social Feedback Loop that puts Blinders on Climate Science
- **Wilfrid Laurier University (2/2024)**
  - The Social Feedback Loop that puts Blinders on Climate Science
- **Private Briefing for \*\*\*\* \* on Economic Impacts of Climate Change (10/2024)**
- **The Manhattan Institute (8/2023)**
  - Lunch and Learn on Contemporary Climate Science
- **The Politics and Markets Project at the University of Rochester Panel (3/2023)**
  - Panel: Will Helping the Environment Hurt the Economy?
- **FireSafe Council of Santa Cruz County Meeting (8/2024)**
  - Economic Costs and Benefits of Fuel Reduction in California
- **8<sup>th</sup> Annual West Valley College Stewardship Symposium (4/2020)**
  - How Climate Change Affects Fires in California
- **The Sequoias Portola Valley Education Seminar (12/2020)**
  - Climate Change in California and its Effects on Wildfire
- **San Jose City Town Hall: Wildfire Safety in the times of Climate Change (10/2020)**
  - Connection between climate change and California fires
- **Earth Day's 50th Anniversary: Pandemic & Climate Disruption Reporting and Communicating Global Threats to Humanity? (4/2020)**
- **Climate Emergency Response Town Hall (8/2018)**
  - The leverage of the current moment on the long-term trajectory of the climate
- **Pinewood School, Los Altos, CA (4/2018)**
  - Global Warming: Science and Solutions
- **Roosevelt School, Redwood City, CA (10/2017)**
  - Human influence on the global climate
- **Quarry Lane School, Dublin, CA (9/2017)**
  - STEM Day 2017! – Math models and climate change
- **San Jose People's Climate March (4/2017)**
  - Defending Science at the People's Climate March
- **Washington Latin Public Charter School (5/2016)**
  - Ask a climate scientist anything
- **Woods Charter School – Environmental Science Guest Speaker (2/2014)**
  - Global Temperature Variability and 'the pause'
- **Environmental Resources Management (ERM) seminar (12/2013)**

- The science behind climate change: what we know and what we don't know in 2013.
- **Bay Area Earth Science Institute: Global Warming and our Carbon Footprint**
  - Global Warming: Topical Aspects of the Science Presented in FAQ Form (7/2011)
  - The State of Climate Science: From Recent Observations to 'Climategate' (3/2010)

## OUTREACH: DIGITAL EDUCATION MATERIAL

- Green Ninja: [Climate Science Video Series](#)
- Green Ninja: [Global Warming FAQ](#)
- [Can humanity maintain perpetual economic growth?](#)
- [Effect of population growth on climate change impacts](#)
- [Climate Science for People Really in a Hurry 2 – Economics](#)
- [Climate Science for People Really in a Hurry](#)
- [Heat waves: How much can be blamed on global warming depends on how you ask the question.](#)
- [Response to Robert Tracinski's article: "What It Would Take to Prove Global Warming"](#)
- [Climate Model Primer](#)
- [Greenhouse Effect and the Earth's Energy Budget](#)
- [andthentheresphysics: Do 'propagation of error' calculations invalidate climate model projections?](#)
- Skeptical Science: [Data Contradicts Connection Between Earth's Tilt and the Seasons](#)
- Climate Ect.: [Unforced variability and the global warming slowdown](#)
- Climate Lab Book: [Top-of-atmosphere contribution to unforced variability in global temperature](#)

## A W A R D S

- 2024 Johns Hopkins Energy Policy and Climate Program Teaching Award
- 2021 2<sup>nd</sup> place in National Forecasting Competition in Faculty Category (New Orleans)
- 2016 Duke Graduate School Fellowship for Outstanding Performance
- 2015 Nicholas School of the Environment Dean's Award for the Best Graduate Student Manuscript
- 2015 Climanosco Launch Challenge: Manuscript took 2nd place overall in international competition.