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Current position(s)

Research Physical Scientist, NASA Goddard Institute for Space Studies, New York, New York
Adjunct Associate Research Scientist, Lamont-Doherty Earth Observatory, Palisades, New York

Areas of specialization

climate extremes, land surface-climate interactions, paleoclimate, plant phenology

Appointments held

2009-pres Research Physical Scientist (GS-14), NASA-GISS, New York
2009-pres Adjunct Research Scientist, LDEO, New York
2009 Scientific Programmer/Analyst, NASA-GISS/Sigma Space Partners
2007-2009 NOAA Global Change Postdoctoral Fellow, NASA-GISS/LDEO

Education

2007 PhD in Environmental Science, University of Virginia (Advisors: Howard Epstein, Paolo D'Odorico)
2004 MSc in Environmental Science, University of Virginia (Advisor: Michael E. Mann)
2001 BS in Environmental and Forest Biology, SUNY College of Environmental Science and Forestry

Awards, Invited Lectures, & Professional Activities

Clarivate Highly Cited Researcher: 2021-2022
ongoing Climate Science Leader in Judicial Education, *Climate Judiciary Project*
ongoing Associate Editor, *Earth Interactions*
ongoing Associate Editor, *Journal of Climate*
ongoing Contributing Author, Chapter 3-Physical Science Processes, Fifth National Climate Assessment
2023 National Academies of Sciences, Engineering, and Medicine Workshop on Tipping Points, Cascading Impacts, and Interacting Risks in the Earth System
2022 K. Douglas Nelson Seminar, Department of Earth and Environmental Sciences, Syracuse University
2021 NASA SED Director's Seminar
2021 Invited Lecture, Department of Earth and Environmental Science, Temple University
2020-2022 Contributing Author, Sixth Assessment Report of the Intergovernmental Panel on Climate Chapter (Working Groups I and II)

2017 CIRES Distinguished Lecturer, University of Colorado, Boulder
 2017 Stephen S Visser Lecturer, Indiana University
 2015 Kavli Fellow, Sixth Indo-American Frontiers of Science Symposium, US National Academy of Sciences
 2013 NASA Early Career Achievement Medal
 2010 2009 Editors' Citation for Excellence in Refereeing, AGU
 2007 NOAA Climate and Global Change Postdoctoral Fellowship, NOAA
 2007 Maury Environmental Sciences Prize, University of Virginia

Peer Reviewed Publications

†student or postdoc in our research group; **as co-lead author

IN REVIEW

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- [162] †Nielsen M, **Cook BI**, Marvel K, Smerdon JE, Ting M, “The changing influence of precipitation on soil moisture drought in the Mediterranean and Western North America under 1, 2, and 3°C of global warming”, *Earth Interactions*
- [161] Mankin JS, Siegert N, Smerdon JE, **Cook BI**, Seager R, Williams AP, Lesk C, Li Z, Singh H, Martinez E, “Nonlinear plant responses to both carbon dioxide and climate diminish future freshwater availability”, *Nature Climate Change*
- [160] Singh J, **Cook BI**, Marvel K, McDermid S, Persad G, Rajaratnam B, Singh D “Anthropogenic aerosols could suppress the South Asian monsoon response to GHGs by up to five decades under a fossil-fuel intensive pathway”, *Geophysical Research Letters*
- [159] **Cook BI**, Anderson W, Slinski K, Shukla S, McNally A, “Investigating the stability of El Niño Southern Oscillation teleconnections to hydroclimate and maize yields in southern and East Africa”, *Journal of Hydrometeorology*
- [158] Ficklin DL, Touma D, **Cook BI**, Wang L, Robeson SM, Hwang T, Scheff J, “Vegetation greening mitigates the impacts of increasing extreme rainfall on runoff events”, *Nature Geoscience*
- [157] King KE, Cook ER, Anchukaitis KJ, **Cook BI**, Smerdon JE, Seager R, Harley G, Spiel B, “The increasing prevalence of hot drought across western North America since the 16th century”, *Nature Climate Change*
- [156] Henley BJ, Nathan R, Peel M, McMahon TA, Ballis N, Woodhouse C, **Cook BI**, Nguyen H, Barria P, McCabe G, Hanel M, Treml V, Gangopadhyay, Abram N, “Multi-year drought probability: how dry, how long, how likely?”, *Water Resources Research*

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- [155] †Chiang F, **Cook BI**, McDermid S, “Diverging Global Dry and Humid Heat Responses to Modern Irrigation”, *Earth Interactions*, DOI: <https://doi.org/10.1175/EI-D-23-0006.1>

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- [153] McDermid S, Nocco M, Lawston-Parker P, Keune J, ..., **Cook BI**,... et al "The impacts of irrigation in the Earth system: recent research advances and needs", *Nature Reviews Earth and Environment*, <https://doi.org/10.1038/s43017-023-00438-5>
- [152] †Chiang F, **Cook BI**, McDermid S, "Warming Reduces the Efficacy of Wet Conditions to Moderate Extreme Heat and Atmospheric Aridity Across the Central Plains", *Geophysical Research Letters*, 50, e2023GLI02939. <https://doi.org/10.1029/2023GLI02939>
- [151] Anderson W, Baethegen W, Capitanio F, Ciaia P, **Cook BI**, da Cunha GR, Goddard L, Schaubberger B, Sonder K, Podestá G, van der Velde M, You L "Climate variability and simultaneous breadbasket yield shocks as observed in long-term yield records", *Agricultural and Forest Meteorology*, Vol 331, doi: <https://doi.org/10.1016/j.agrformet.2023.109321>
- [150] Mondal S, Mishra AK, Leung R, **Cook BI** "Global droughts connected by linkages between drought hubs", *Nature Communications*, doi: <https://doi.org/10.1038/s41467-022-35531-8>

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- [148] Weng E, Aleinov I, Singh R, Puma MJ, McDermid SS, Kiang NY, Kelley M, Wilcox K, Dybinski R, Farrior CE, Pacala SW, **Cook BI** "Modeling demographic-driven vegetation dynamics and ecosystem biogeochemical cycling in NASA GISS's Earth system model (ModelE-BiomeE v.1.0)", *Geoscientific Model Development*, 15, no. 22, 8153-8180, doi:10.5194/gmd-15-8153-2022
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- [143] †Chiang F, **Cook BI**, McDermid S, Marvel K, Schmidt G, Nazarenko LS, Kelley M "Responses of compound daytime and nighttime warm-dry and warm-humid events to individual anthropogenic forcings", *Environmental Research Letters*, 17, no. 8, 084015, doi:10.1088/1748-9326/ac80ce

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- [127] Chamberlain CJ, **Cook BI**, Morales-Castilla, Wolkovich EM “Climate change reshapes the drivers of false spring risk across European trees”, *New Phytologist*, doi: <https://doi.org/10.1111/nph.16851>
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2019

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Funded Proposal & Grants

“Integrating models, paleoclimate, and recent observations to develop process-level understanding of projected changes in US drought”, NOAA 2018 MAPP Award, NOAA-OAR-CPO-2019-2005530, Lead Principal Investigator, \$178,110

“Quantifying process-based variability and uncertainties in ocean, land, and atmosphere forcing of extra-tropical droughts and heat waves in GISS ModelE and observations”, NASA MAP Award 16-MAP16-0081, Lead Principal Investigator, \$898,819

“Collaborative Research: Cool and Warm Season Reconstruction and Modeling over North America”, NSF Award AGS-1266014, Collaborator, \$219,650

“P2C2: Continental scale droughts in North America: Their frequency, character and causes over the past millennium and near term future”, NSF Paleo-Perspectives on Climate Change, Collaborator, \$776,807

“Parameter Sets and Propagation of Uncertainty in a Global Terrestrial Biosphere Model: Data Mining, Diversity, and Expected Variability”, NASA ROSES 2012, Modeling Analysis and Prediction,

CO-I, \$630,600

“Collaborative Research: EaSM2: Linking near-term future changes in weather and hydroclimate in western North America to adaptation for ecosystem and water management” NSF Award, CO-I, \$2,106,026

“Forecasting phenology: Integrating ecology, climatology, and phylogeny to understand plant responses to climate change.” Working Group Proposal, National Center for Ecological Analysis and Synthesis. **Cook BI** and Wolkovich E

“Paleoclimate Shocks: Environmental Variability, Human Vulnerability, and Societal Adaptation During the Last Millennium in the Greater Mekong Basin.” NSF Award GEO-0908971, CO-I, \$1,401,351

“North American Megadrought: Atmosphere-Ocean Forcing and Landscape Response from the Medieval Period to the Near-Term Greenhouse Future.” NSF Award ATM-0902716, CO-I, \$638,135

“NSF P2C2 Collaborative Research: Past and Future Drought Variability in the Mediterranean Basin”. NSF Award I103450, CO-I, \$70,388

Mentoring

CURRENT: Miriam Nielsen (Ph. D. student, lead advisor), Nate Price (high school intern), Janel Husyenova (high school intern)

PAST: Felicia Chiang (postdoc, lead advisor), Andrew Bell (postdoc, co-advisor; currently Associate Professor at Cornell University), Sloan Coats (graduate student, Ph. D. committee member; currently Assistant Professor University of Hawaii), Leo Lemordant (graduate student, Ph.D. committee member), Madeleine Pascolini-Campbell (graduate student, Ph.D. committee member, currently research scientist at NASA JPL), Justin S Mankin (postdoc, co-advisor; currently Associate Professor at Dartmouth College), Deepti Singh (postdoc, co-advisor; currently Assistant Professor at Western Washington University), Fiker Zewdie (high school intern), Ben Efrat (high school intern), Ian Russell (high school intern)

Other Publications

Cook BI (2018): “Guest post: Climate change is already making droughts worse”, Carbon Brief

Cook BI (2016): “Global warming is pushing wine harvests earlier – but not necessarily for the better”, The Conversation

Marvel K, Schmidt GA, Tsigaridis K, **Cook BI** (2015) “Sensitivity to factors underlying the hiatus”, *US CLIVAR Variations*, 13, no. 3, 25-29

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Classes Taught

The Earth's Climate System: A quantitative introduction to the climate system, including an overview of the global energy balance, general circulation, and specialized topics intended for non-science majors. (*Sustainability Management Program, Columbia Unverisity*)

Selected Media Coverage

- John Schwartz *New York Times* (May 1, 2019), [In a Warming World, Evidence of a Human ‘Fingerprint’ on Drought](#)
- Allison Aubrey *All Things Considered, National Public Radio* (March 23, 2016), [Study Finds Climate Change Could Be Leading To Better Wine](#)
- Lucy Westcott *Newsweek* (March 3, 2016), [MOST RECENT MIDDLE EAST DROUGHT WAS WORST IN 900 YEARS: NASA](#)
- Ishaan Tharoor *Washington Post* (March 4, 2016), [The Middle East just suffered its worst drought in 900 years](#)
- Don Melvin *CNN* (March 3, 2016), [Mideast’s worst drought in 900 years may have contributed to Syrian war](#)
- Darryl Fears *Washington Post*, [A ‘megadrought’ will grip U.S. in the coming decades, NASA researchers say](#)
- Ben Brumfeld *CNN* (February 14, 2015), [Risk of American ‘megadroughts’ for decades, NASA warns](#)
- Brian Clark Howard *National Geographic* (February 12, 2015), [Worst Drought in 1,000 Years Predicted for American West](#)
- Hannah Hoag *Nature News & Views* (October 16, 2014), [US Dust Bowl unrivalled in past 1,000 years](#)
- Andrea Thompson, *Climate Central* (April 2, 2014), [Warming Temperatures Could Dry Out One Third of Planet](#)
- Jonathan Overpeck, *Nature News & Views* (November 20, 2013), [Climate science: The challenge of hot drought](#)
- ScienceDaily* (March 11, 2013), [Study Predicts Lag in Summer Rains Over Parts of US and Mexico](#)
- Nicholas Mott, *National Geographic, Daily News* (November 9, 2012), [Why the Maya Fell: Climate Change, Conflict—And a Trip to the Beach?](#)
- UC Santa Barbara, *Science Daily* (June 1, 2012), [Plants Previously Thought to Be ‘Stable’ Found to Be Responding to Climate Change](#)
- Kim McDonald, *Phys.Org* (May 22, 2012), [More plant species responding to global warming than previously thought](#)
- Elizabeth Pennisi, *ScienceNOW* (May 2, 2012), [Plant Experiments Underestimate Climate Change Effects](#)
- Leslie McCarthy and Patrick Lynch, *NASA* (May 2, 2012), [Decades of Data Show Spring Advancing Faster Than Experiments Suggest](#)
- Shazia Khan, *NYI* (March 20, 2012), [Experts Say Warm Winter Could Lead To A Hot, Buggy Spring](#)
- Holli Riebeek and Jess Allen, *NASA Image of the Day* (February 1, 2012), [Mayan Deforestation and Drought](#)
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- Adam Voiland and Maria José-Viñas, *NASA* (December 1, 2011), [Ancient Dry Spells Offer Clues About the Future of Drought](#)
- Jai Ranganathan, *Pacific Standard* (December 17, 2010), [The Dust Bowl: Lessons from the Greatest U.S. Environmental Disaster](#)
- Justin Gillis, *New York Times* (September 9, 2010), [The Irrigation Juggernaut](#)
- Michael Reilly, *Discovery News* (March 23, 2009), [Dust Bowl Had Human Fingerprint](#)
- Anthony DePalma, *New York Times* (September 15, 2008), [Weather History Offers Insight Into Global Warming](#)
- Jeanna Bryner, *Live Science* (May 4, 2008), [Why the 1930s Dust Bowl Was So Bad](#)