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Current position(s)

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

Areas of specialization

Interactions and feedbacks between the land surface, terrestrial ecosystems, and the climate system; drought dynamics; paleoclimate.

Appointments held

2009-pres Research Physical Scientist (GS-13), 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
2004 MSc in Environmental Science, University of Virginia
2001 BS in Environmental and Forest Biology, SUNY College of Environmental Science and Forestry

Awards & Fellowships

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 review

Cook BI, Shukla SP, Puma MJ, "Irrigation as an historical climate forcing", *Climate Dynamics*

Cook BI, Smerdon JE, Seager R, Coats S, "Global Warming and Drought in the 21st Century", *Climate Dynamics*

Schmidt GA, Annan JD, Bartlein PJ, **Cook BI**, Guilyardi E, Hargreaves JC, Harrison SP, Kageyama M, LeGrande AN, Konecky B, Lovejoy S, Mann ME, Masson-Delmotte V, Risi C, Thompson D, Timmermann A, Tremblay L-B, and Yiou P, "Using paleo-climate comparisons to constrain future projections in CMIP5", *Climate of the Past Discussions*, 9, 775-835, doi: 10.5194/cpd-9-775-2013

in press

Davies TJ, Wolkovich EM, Kraft NJB, Salamin N, Allen JM, Ault TR, Betancourt JL, Bolmgren K, Cleland EE, **Cook BI**, Crimmins TM, Mazer SJ, McCabe GR, Pau S, Regetz J, Schwartz MD, Travers SE, "Phylogenetic conservatism in plant phenology". *Journal of Ecology*, doi: 10.1111/1365-2745.12154

Cook BI, Smerdon JE, Seager R, Cook ER, "Pan-continental droughts in North America over the last millennium", *Journal of Climate*

Shukla SP, Puma MJ, **Cook BI**, "The Response of the South Asian Summer Monsoon Circulation to Intensified Irrigation in Global Climate Model Simulations", *Climate Dynamics*, doi: 10.1007/s00382-013-1786-9

2013

Pau S, Wolkovich EM, **Cook BI**, Nytch CJ, Regetz J, Zimmerman JK, Wright SJ, "A Global Assessment of Long-Term Greening and Browning Trends in Pasture Lands Using the GIMMS LAI3g Dataset", *Nature Climate Change*, 3, 838–842, doi: 10.1038/nclimate1934.

†Coats S, Smerdon JE, Seager R, **Cook BI**, González-Rouco JF, "Megadroughts in Southwestern North America in Millennium-Length ECHO-G Simulations and their Comparison to Proxy Drought Reconstruction", *Journal of Climate*, 26, 7635–7649, doi: http://dx.doi.org/10.1175/JCLI-D-12-00603.1

†Bell AR, Osgood DE, **Cook BI**, Anchukaitis KJ, McCarney GR, Greene AM, Buckley BM, Cook ER, "Paleoclimate histories improve access and sustainability in index insurance programs", *Global Environmental Change*, 4, 774–781, doi: http://dx.doi.org/10.1016/j.gloenvcha.2013.03.003

Mazer SJ, Travers SE, **Cook BI**, Davies TJ, Bolmgren K, Kraft NJB, Salamin N, Inouye DW, "Flowering date of taxonomic families predicts phenological sensitivity to temperature: implications for forecasting the effects of climate change on unstudied taxa", *American Journal of Botany*, 100, doi: 10.3732/ajb.1200455

Wolkovich EM, Davies TJ, Schaefer H, Cleland EE, **Cook BI**, Travers SE, Willis CG, Davis CC, "Temperature-dependent shifts in phenology contribute to the success of exotic species with climate change", *American Journal of Botany*, 100, 1407–1421, doi: 10.3732/ajb.1200478

Cook BI, Seager R, Miller RL, Mason JA, "Intensification of North American megadroughts through surface and dust aerosol forcing", *Journal of Climate*, 26, 4414–4430, doi: http://dx.doi.org/10.1175/JCLI-

D-12-00022.1

†Coats S, Smerdon JE, **Cook BI**, Seager R, "Teleconnection Stability over North America in CMIP5/PMIP3 Model Simulations", *Geophysical Research Letters*, 40, 4927–4932, doi: 10.1002/grl.50938.

Krakauer NY, Puma MJ, **Cook BI**, "Impacts of soil-aquifer heat and water fluxes on simulated global climate", *Hydrology and Earth System Sciences*, 17, 1963–1974, doi: 10.5194/hess-17-1963-2013

Cook BI, Pau S, "A Global Assessment of Long-Term Greening and Browning Trends in Pasture Lands Using the GIMMS LAI3g Dataset", *Remote Sensing, 5, 2492–2512, doi: 10.3390/rs5052492*

Puma MJ, Koster RD, **Cook BI**, "Phenological versus meteorological controls on land–atmosphere water and carbon fluxes", *Journal of Geophysical Research-Biogeosciences*, 118, doi: 10.1029/2012JG002088

Cook BI, Seager R, "The response of the North American Monsoon to increased greenhouse gas forcing", *Journal of Geophysical Research-Atmospheres*, 118, 1690–1699, doi: 10.1002/jgrd.50111

Seager R, Ting M, Li C, Naik N, **Cook BI**, Liu H, Nakamura J, "Declining surface water availability projected for the southwest U.S. in coming decades", *Nature Climate Change*, 3, 482–486, doi: 10.1038/nclimate1787

2012

Cook BI, Wolkovitch EM, Davies TJ, Ault TR, Betancourt JL, Allen JM, Bolmgren K, Cleland EE, Crimmins TM, Kraft NJB, Lancaster LT, Mazer SJ, McCabe GJ, McGill BJ, Parmesan C, Pau S, Regetz J, Salamin N, Schwartz MD, Travers SE, "Sensitivity of spring phenology to warming across temporal and spatial climate gradients in two independent databases", *Ecosystems*, 15, 1283–1294, doi: 10.1007/s10021-012-9584-5

Cook BI, Bell AR, Anchukaitis KJ, Buckley BM, "Snow cover and precipitation impacts on dry season streamflow in the Lower Mekong Basin", *Journal of Geophysical Research-Atmospheres*, 117, doi: 10.1029/2012JD017708

Cook BI, Anchukaitis KJ, Kaplan JO, Puma MJ, Kelley M, Gueyffier D, "Pre-Columbian deforestation as an amplifier of drought in Mesoamerica", *Geophysical Research Letters*, 39, doi: 10.1029/2012GL052565

Cook BI, Wolkovich EM, Parmesan C, "Divergent responses to spring and winter warming drive community level flowering trends", *Proceedings of the National Academy of Sciences*, 109, 9000–9005, doi: 10.1073/pnas.1118364109

Wolkovich EM, **Cook BI**, Allen JM, Crimmins TM, Betancourt JL, Travers SE, Pau S, Regetz J, Davies TJ, Kraft NJB, Ault TR, Bolmgren K, Mazer SJ, McCabe GJ, McGill BJ, Parmesan C, Salamin N, Schwartz MD, Cleland EE, "Warming experiments underpredict plant phenological responses to climate change", *Nature*, 485, 494–497, doi:10.1038/nature11014

2011

Cook BI, Seager R, Miller RL, "On the causes and dynamics of the early twentieth century North American pluvial", *Journal of Climate*, 24, 5043–5060, doi: http://dx.doi.org/10.1175/2011JCLI4201.1

Cook BI, Puma MJ, Krakauer NY, "Irrigation induced surface cooling in the context of modern and increased greenhouse gas forcing", *Climate Dynamics*, 37, 1587–1600, DOI: 10.1007/s00382-010-0932-x

Cook BI, Cook ER, Anchukaitis KJ, Seager R, Miller RL, "Forced and unforced variability of twentieth century North American droughts and pluvials", *Climate Dynamics*, 37, 1097–1110, doi: 10.1007/s00382-010-0897-9

Cook BI, Seager R, Miller RL, "The impact of devegetated dune fields on North American climate during the Medieval Climate Anomaly", *Geophysical Research Letters*, 38, doi:10.1029/2011GL047566

Tierney JE, Lewis SC, **Cook BI**, Legrande AN, Schmidt GA, "Model, proxy and isotopic perspectives on the East African Humid Period", *Earth and Planetary Science Letters*, 307, 103–112, doi: dx.doi.org/10.1016/j.epsl.2011.04.038

McCabe GJ, Ault TR, **Cook BI**, Betancourt JL, Schwartz MD, "Influences of the El Niño Southern Oscillation and the Pacific Decadal Oscillation on the timing of the North American spring", *International Journal of Climatology*, 31, 2301–2310, doi: 10.1002/joc/3400

Pau S, Wolkovich EM, **Cook BI**, Davies TJ, Kraft NJB, Bolmgren K, Betancourt JL, Cleland EE, "Predicting phenology by integrating ecology, evolution and climate science", *Global Change Biology*, 17, 3633–3643, DOI: 10.1111/j.1365-2486.2011.02515.x

Cook BI, Seager R, Miller RL, "Atmospheric circulation anomalies during two persistent North American droughts: 1932-1939 and 1948-1957", *Climate Dynamics*, 36, 2339–2355, doi: 10.1007/s00382-010-0807-1

†Bell AR, **Cook BI**, Anchukaitis KJ, Buckley BM, Cook ER, "Repurposing climate reconstructions for drought prediction in Southeast Asia", *Climatic Change*, 106, p 691–698, DOI: 10.1007/s10584-011-0064-2

2010

Cook BI, Terando A, Steiner A, "Ecological forecasting and climate data uncertainties: a phenology modeling case study", *Environmental Research Letters*, 5, doi: 10.1088/1748-9326/5/4/044014

Anchukaitis KJ, Buckley BM, Cook ER, **Cook BI**, D'Arrigo RD, Ammann CM, "The influence of volcanic eruptions on the climate of the Asian monsoon region", *Geophysical Research Letters*, 37, doi: 10.1029/2010GL044843

Puma MJ, **Cook BI**, "Effects of irrigation on global climate during the twentieth century", *Journal of Geophysical Research-Atmospheres*, 115, doi: 10.1029/2010JD014122

Krakauer NY, **Cook BI**, Puma MJ, "Contribution of soil moisture feedback to global climate variability", *Hydrology and Earth System Sciences*, 14, 505–520, doi: 10.5194/hess-14-505-2010

Cook BI, Cook ER, Anchukaitis KJ, Huth PC, Thompson JE, Smiley SF, "A homogeneous record (1896-2006) of daily weather and climate at Mohonk Lake, New York", *Journal of Applied Meteorology and Climatology*, 49, 544–555, doi: http://dx.doi.org/10.1175/2009JAMC2221.1

2009

Cook BI, Buckley BM, "Objective determination of monsoon season onset, withdrawal, and length", *Journal of Geophysical Research-Atmospheres*, 114, doi: 10.1029/2009JD012795

Cook BI, Miller RL, Seager R, "Amplification of the 'Dust Bowl' drought through human induced land

degradation", *Proceedings of the National Academy of Sciences*, 106, 4997–5001, doi: 10.1073/pnas.0810200106

Sacks W, **Cook BI**, Buenning N, Levis S, Helkowski JH, "Effects of global irrigation on near-surface climate", *Climate Dynamics*, 33, 159–175, doi:10.1007/s00382-008-0445-z

2008

Hui WCJ, **Cook BI**, D'Odorico P, Ravi S, Fuentes J, "Dust-rainfall feedbacks in the West African Sahel", *Water Resources Research*, 44, doi: 10.1029/2008WR006885

Cook BI, Miller RL, Seager R, "Dust and sea surface temperature forcing of the 1930s 'Dust Bowl' drought", *Geophysical Research Letters*, 35, doi:10.1029/2007GL032509

Cook BI, Bonan GB, Levis S, Epstein HE, "The thermoinsulation effect of snow cover within a climate model", *Climate Dynamics*, 31, 107–124, doi: 10.1007/s00382-007-0341-y

Cook BI, Bonan GB, Levis S, Epstein HE, "Rapid vegetation responses and feedbacks amplify climate model response to snow cover changes", *Climate Dynamics*, 30, 391–406, doi:/10.1007/s00382-007-0296-z

Cook BI, Cook ER, Huth P, Thompson JE, Forster A, Smiley D, "A cross-taxa phenological dataset from Mohonk Lake, NY and its relationship to climate", *International Journal of Climatology*, 28, 1369–1383, DOI: 10.1002/joc.1629

2006

Cook BI, Bonan GB, Levis S, "Soil moisture feedbacks to precipitation in southern Africa", *Journal of Climate*, 19, 4198–4206, doi: http://dx.doi.org/10.1175/JCLI3856.1

2005

Buckley BM, **Cook BI**, Bhattacharyya A, Dukpa D, Chaudhary V, "Global surface temperature signals in pine ring-width chronologies from southern monsoon Asia", *Geophysical Research Letters*, 32, doi:10.1029/2005GL0234745

Cook BI, Smith TM, Mann ME, "The North Atlantic Oscillation and regional phenology prediction over Europe", *Global Change Biology*, 11, 919–926, doi: 10.1111/j.1365-2486.2005.00960.x

2004

L'Heureux ML, Mann ME, **Cook BI**, Gleason BE, Vose RS, "Atmospheric circulation influences on seasonal precipitation patterns in Alaska during the latter twentieth century", *Journal of Geophysical Research-Atmospheres*, 109, doi: 10.1029/2003JDO03845

Cook BI, Mann ME, D'Odorico P, Smith TM, "Statistical simulation of the NAO on European winter surface temperatures: applications to phenological modeling", *Journal of Geophysical Research-Atmospheres*, 109, doi: 10.1029/2003JD004305

2003

Cook ER, Palmer JG, **Cook BI**, Hogg A, D'Arrigo RD, "A multi-millennial palaeoclimate resource from Lagorostrobos colensoi tree-rings at Oroko Swamp, New Zealand", *Global and Planetary Change*, 33, 209–220, doi: http://dx.doi.org/10.1016/S0921-8181(02)00078-4

Other Publications

Seager R, **Cook BI** (in press), "Dust Bowl", Encyclopedia of Natural Hazards

Puma MJ, **Cook BI** (2011), "Irrigation's climate effects and the water sustainability link", *International Water Power and Dam Construction Magazine*, pp. 38–40, March

Students, Postdocs, and Interns

Andrew Bell (postdoc), Liora Hostyk (undergrad), Sloan Coats (graduate student-committee member)

Funded Proposal & Grants

"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 Millenium 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 1103450, CO-I, $70,388

Professional Activities

-Member of "Phenology Team" as part of the National Climate Assessment
-Member of the Plant Phenology Advising Working Group, National Ecological Observatory Network (NEON)
-Advisor to research interns and postdoctoral researcher as part of NSF Award GEO-0908971; also advised High School Students on independent study projects at LDEO
-Panel, proposoal, and manuscript reviewer: NASA, NSF, Journal of Geophysical Research, Global Change Biology, Water Resources Research, Geophysical Research Letters, Climate Dynamics, and Nature Geoscience.
-Lead organizer for oral and poster session at AGU 2010, "A03: Understanding Drought Variability, Forcing, and Feedbacks"
-Lead organizer for oral and poster session at AGU 2011, "B43a: Beyond Earlier Spring: Diverse Phenological Responses to Climate Across Species and Ecosystems"

Invited Talks

"Intensification of North American megadroughts through surface and dust aerosol forcing", Fall Meeting of the American Geophysical Union in San Francisco, December 2012

"Sensitivity of spring phenology to warming across temporal and spatial climate gradients in two independent databases", Fall Meeting of the American Geophysical Union in San Francisco, December 2012

"Intensification of North American megadroughts through surface and dust aerosol forcing", Lamont-Doherty Earth Observatory, April 2012

"Intensification of North American megadroughts through surface and dust aerosol forcing", Geophysical Fluid Dynamics Laboratory, January 2012

"Pre-Columbian deforestation as an amplifier of drought in Mesoamerica", Fall Meeting of the American Geophysical Union in San Francisco, December 2011

"Irrigation in the climate system: transient and equilibrium responses", EPFL (Lausanne, SW), March 2011

"Amplification of the North American Dust Bowl Drought by human induced land degradation", Georgia Tech, April 2009

"Amplification of the North American Dust Bowl Drought by human induced land degradation", University of Colorado-Boulder, March 2009

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 and Outreach

-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, *NY1* (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
-Stephanie Pappas, *MSNBC* (December 5, 2011), *Real Mayan apocalypse may have been their own fault*
-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*