Stanford



Jen Burney

Professor of Environmental Social Sciences, of Earth System Science and Senior Fellow at the Freeman Spogli Institute for International Studies and at the Woods Institute for the Environment

Bio

BIO

Jennifer (Jen) Burney is a Professor in Global Environmental Policy and Earth System Science in the Doerr School of Sustainability. Her research focuses on the coupled relationships between climate and food security – measuring air pollutant emissions and concentrations, quantifying the effects of climate and air pollution on land use and food systems, understanding how food production and consumption contribute to climate change, and designing and evaluating technologies and strategies for adaptation and mitigation among the world's farmers. Her research group combines methods from physics, ecology, statistics, remote sensing, economics, and policy to understand critical scientific uncertainties in this coupled system and to provide evidence for what will – or won't – work to simultaneously end hunger and stabilize earth's climate. She earned a PhD in physics in 2007, completed postdoctoral fellowships in both food security and climate science, and was named a National Geographic Emerging Explorer in 2011; prior to joining the Doerr School, she served on the faculty at UC San Diego's School of Global Policy and Strategy and Scripps Institution of Oceanography.

ACADEMIC APPOINTMENTS

- Professor, Environmental Social Sciences
- Professor, Earth System Science
- Senior Fellow, Freeman Spogli Institute for International Studies
- Senior Fellow, Stanford Woods Institute for the Environment

LINKS

- Research Group Website: https://www.burney-lab.org
- Program on Food Security and the Environment: http://fse.stanford.edu

Teaching

COURSES

2026-27

- Modeling Human-Environment Systems: ESS 136, ESS 236 (Spr)
- Sustainable Food Security: Advanced Seminar: GEP 107, GEP 207 (Spr)

2025-26

- Modeling Human-Environment Systems: ESS 136, ESS 236, GEP 115, GEP 215 (Win)
- World Food Economy: EARTHSYS 106, EARTHSYS 206, ECON 106, ECON 206, ESS 106, ESS 206, GEP 106, GEP 206 (Win)

STANFORD ADVISEES

Doctoral Dissertation Co-Advisor (AC)

Abigail Fitzgibbon

Doctoral (Program)

Aarabhi Achanta

Publications

PUBLICATIONS

- **How Many (Half) Moons? Measuring Technology Adoption from the Sky and on the Ground**
  Aker, J. C., Burney, J., Campion, A., Jack, B., Liao, C.
  AMER ECONOMIC ASSOC.2026: 173-177

- **Women-led sustainable irrigation improved indicators of nutritional status in children from Northern Benin.** *Journal of health, population, and nutrition*
  Taren, D., Alaofè, H., Burney, J., Luo, H., Suchdev, P. S., Long, J. M., Naylor, R.
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- **Emulation of the Climate Response to Greenhouse Gas and Aerosol Emissions From High- and Low-Income Nations** *GEOPHYSICAL RESEARCH LETTERS*
  Polonik, P., Burney, J., Ricke, K.
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- **Crop water origins and hydroclimate vulnerability of global croplands** *NATURE SUSTAINABILITY*
  Jiang, Y., Burney, J. A.
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- **Eliminating hunger in a world serious about climate mitigation.** *Proceedings of the National Academy of Sciences of the United States of America*
  Burney, J. A.
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- **The Influence of Wildfire Smoke on Ambient PM2.5 Chemical Species Concentrations in the Contiguous US.** *Environmental science & technology*
  Krasovich Southworth, E., Qiu, M., Gould, C. F., Kawano, A., Wen, J., Heft-Neal, S., Kilpatrick Voss, K., Lopez, A., Fendorf, S., Burney, J. A., Burke, M.
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- **Estimating the impacts of climate change: reconciling disconnects between physical climate and statistical models** *CLIMATIC CHANGE*
  Polonik, P., Ricke, K., Burney, J.
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- **Climate change exacerbates the environmental impacts of agriculture.** *Science (New York, N.Y.)*
  Yang, Y., Tilman, D., Jin, Z., Smith, P., Barrett, C. B., Zhu, Y. G., Burney, J., D'Odorico, P., Fantke, P., Fargione, J., Finlay, J. C., Rulli, M. C., Sloat, et al
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- **Empirical modeling of agricultural climate risk** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Burney, J., Mcintosh, C., Lopez-Videla, B., Samphantharak, K., Maia, A.
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- **Age-Dependent Variations in Kawasaki Disease Incidence in Japan** *JAMA NETWORK OPEN*
  DeHaan, L. L., Copeland, C. D., Burney, J. A., Nakamura, Y., Yashiro, M., Shimizu, C., Miyata, K., Burns, J. C., Cayan, D. R.
  2024; 7 (2): e2355001

- **Air quality equity in US climate policy** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Polonik, P., Ricke, K., Reese, S., Burney, J.
  2023; 120 (26): e2217124120
- **Warming reduces global agricultural production by decreasing cropping frequency and yields** *NATURE CLIMATE CHANGE*
  Zhu, P., Burney, J., Chang, J., Jin, Z., Mueller, N. D., Xin, Q., Xu, J., Yu, L., Makowski, D., Ciais, P.
  2022; 12 (11): 1016-+
- **Geographically resolved social cost of anthropogenic emissions accounting for both direct and climate-mediated effects.** *Science advances*
  Burney, J., Persad, G., Proctor, J., Bendavid, E., Burke, M., Heft-Neal, S.
  2022; 8 (38): eabn7307
- **Daily Local-Level Estimates of Ambient Wildfire Smoke PM2.5 for the Contiguous US.** *Environmental science & technology*
  Childs, M. L., Li, J., Wen, J., Heft-Neal, S., Driscoll, A., Wang, S., Gould, C. F., Qiu, M., Burney, J., Burke, M.
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- **Exposures and behavioural responses to wildfire smoke.** *Nature human behaviour*
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- **Epidemiological and Clinical Features of Kawasaki Disease During the COVID-19 Pandemic in the United States** *JAMA NETWORK OPEN*
  Burney, J. A., Roberts, S. C., DeHaan, L. L., Shimizu, C., Bainto, E., Newburger, J. W., Dominguez, S., Jone, P., Jaggi, P., Szmuszkovicz, J. R., Rowley, A. H., Samuy, N., Scalici, et al
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- **Globally ubiquitous negative effects of nitrogen dioxide on crop growth.** *Science advances*
  Lobell, D. B., Di Tommaso, S., Burney, J. A.
  2022; 8 (22): eabm9909
- **Land-use emissions embodied in international trade.** *Science (New York, N.Y.)*
  Hong, C., Zhao, H., Qin, Y., Burney, J. A., Pongratz, J., Hartung, K., Liu, Y., Moore, F. C., Jackson, R. B., Zhang, Q., Davis, S. J.
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  Bluhm, R., Polonik, P., Hemes, K. S., Sanford, L. C., Benz, S. A., Levy, M. C., Ricke, K. L., Burney, J. A.
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- **Untangling irrigation effects on maize water and heat stress alleviation using satellite data** *HYDROLOGY AND EARTH SYSTEM SCIENCES*
  Zhu, P., Burney, J.
  2022; 26 (3): 827-840
- **Temporal clustering of Kawasaki disease cases around the world** *SCIENTIFIC REPORTS*
  Burney, J. A., DeHaan, L. L., Shimizu, C., Bainto, E., Newburger, J. W., DeBiasi, R. L., Dominguez, S. R., Portman, M. A., Melish, M., Bratincsak, A., Fabi, M., Corinaldesi, E., Yu, et al
  2021; 11 (1): 22584
- **Widespread Race and Class Disparities in Surface Urban Heat Extremes Across the United States** *EARTHS FUTURE*
  Benz, S., Burney, J.
  2021; 9 (7)
- **Cleaner air has contributed one-fifth of US maize and soybean yield gains since 1999** *ENVIRONMENTAL RESEARCH LETTERS*
  Lobell, D. B., Burney, J. A.
  2021; 16 (7)
- **Drivers and projections of global surface temperature anomalies at the local scale** *ENVIRONMENTAL RESEARCH LETTERS*
  Benz, S. A., Davis, S. J., Burney, J. A.
  2021; 16 (6)
- **Improving production and quality of life for smallholder farmers through a climate resilience program: An experience in the Brazilian SertAo** *PLOS ONE*

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- **Paris Agreement's Ambiguity About Aerosols Drives Uncertain Health and Climate Outcomes** *EARTHS FUTURE*
  Polonik, P., Ricke, K., Burney, J.
  2021; 9 (5)
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  Krebs, B., Burney, J., Zivin, J., Neidell, M.
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- **Climate resilience programmes and technical efficiency: evidence from the smallholder dairy farmers in the Brazilian semi-arid region** *CLIMATE AND DEVELOPMENT*
  Gori Maia, A., Silveira, R., Veneo Campos Fonseca, C., Burney, J., Cesano, D.
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  Neely, W. R., Borsa, A. A., Burney, J. A., Levy, M. C., Silverii, F., Sneed, M.
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  Burns, J. C., DeHaan, L. L., Shimizu, C., Bainto, E., Tremoulet, A. H., Cayan, D. R., Burney, J. A.
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- **Temperature-driven harvest decisions amplify US winter wheat loss under climate warming** *GLOBAL CHANGE BIOLOGY*
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- **Fine-scale spatiotemporal variation in subsidence across California's San Joaquin Valley explained by groundwater demand** *ENVIRONMENTAL RESEARCH LETTERS*
  Levy, M. C., Neely, W. R., Borsa, A. A., Burney, J. A.
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- **The COVID-19 lockdowns: a window into the Earth System** *NATURE REVIEWS EARTH & ENVIRONMENT*
  Diffenbaugh, N. S., Field, C. B., Appel, E. A., Azevedo, I. L., Baldocchi, D. D., Burke, M., Burney, J. A., Ciais, P., Davis, S. J., Fiore, A. M., Fletcher, S. M., Hertel, T. W., Horton, et al
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- **Dust pollution from the Sahara and African infant mortality** *NATURE SUSTAINABILITY*
  Heft-Neal, S., Burney, J., Bendavid, E., Voss, K. K., Burke, M.
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- **The downstream air pollution impacts of the transition from coal to natural gas in the United States (vol 3, pg 152, 2020)** *NATURE SUSTAINABILITY*
  Burney, J. A.
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  Burney, J. A.
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  Hernandez, R. R., Armstrong, A., Burney, J., Ryan, G., Moore-O'Leary, K., Diedhiou, I., Grodsky, S. M., Saul-Gershenz, L., Davis, R., Macknick, J., Mulvaney, D., Heath, G. A., Easter, et al
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  Heft-Neal, S., Burney, J., Bendavid, E., Burke, M.
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  Alaofe, H., Burney, J., Naylor, R., Taren, D.
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  Mafios, E., Burney, J.
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- **Association Between Women's Empowerment and Maternal and Child Nutrition in Kalalé District of Northern Benin.** *Food and nutrition bulletin*
  Alaofè, H. n., Zhu, M. n., Burney, J. n., Naylor, R. n., Douglas, T. n.
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- **Solar-Powered Drip Irrigation Impacts on Crops Production Diversity and Dietary Diversity in Northern Benin** *FOOD AND NUTRITION BULLETIN*
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  Burney, J. A., Naylor, R. L.
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- **Transition-edge sensor arrays for UV-optical-IR astrophysics** *11th International Workshop on Low-Temperature Detectors*

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  Bay, T. J., Burney, J. A., Brink, P. L., Cabrera, B., Castle, J. P., Romani, R. W., Tomada, A., Young, B. A., Nam, S. W., Miller, A. J., Martinis, J. M., Kenny, T., Wang, et al
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