Stanford



David Lobell

Benjamin M. Page Professor, William Wrigley Senior Fellow at the Freeman Spogli Institute, at the Woods Institute for the Environment and at the Stanford Institute for Economic Policy Research

Earth System Science

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Contact**

  Karen Yang - FSE Associate Director for Finance and Administration

  Email ksyang@stanford.edu

  Tel 650-736-3681

Bio

BIO

David Lobell is the Benjamin M. Page Professor at Stanford University in the Department of Earth System Science and the Gloria and Richard Kushel Director of the Center on Food Security and the Environment. He is also the William Wrigley Senior Fellow at the Stanford Woods Institute for the Environment, and a senior fellow at the Freeman Spogli Institute for International Studies (FSI) and the Stanford Institute for Economic Policy and Research (SIEPR).

Lobell's research focuses on agriculture and food security, specifically on generating and using unique datasets to study rural areas throughout the world. His early research focused on climate change risks and adaptations in cropping systems, and he served on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report as lead author for the food chapter and core writing team member for the Summary for Policymakers. More recent work has developed new techniques to measure progress on sustainable development goals and study the impacts of climate-smart practices in agriculture. His work has been recognized with various awards, including the Macelwane Medal from the American Geophysical Union (2010), a Macarthur Fellowship (2013), the National Academy of Sciences Prize in Food and Agriculture Sciences (2022) and election to the National Academy of Sciences (2023).

Prior to his Stanford appointment, Lobell was a Lawrence Post-doctoral Fellow at Lawrence Livermore National Laboratory. He holds a PhD in Geological and Environmental Sciences from Stanford University and a Sc.B. in Applied Mathematics from Brown University.

ACADEMIC APPOINTMENTS

- Professor, Earth System Science
- Senior Fellow, Freeman Spogli Institute for International Studies
- Senior Fellow, Stanford Woods Institute for the Environment
- Senior Fellow, Stanford Institute for Economic Policy Research (SIEPR)

- Affiliate, Precourt Institute for Energy
- Member, Stanford Data Science
- Faculty Director, Sustainability Data Science

ADMINISTRATIVE APPOINTMENTS

- Lawrence Postdoctoral Fellow, Lawrence Livermore National Laboratory, (2005-2007)
- Senior Research Scholar, Program on Food Security and the Environment, Stanford University, (2008-2009)
- Senior Fellow, Stanford Woods Institute for the Environment, Stanford University, (2009- present)
- Senior Fellow, Freeman Spogli Institute for International Studies, Stanford University, (2009- present)
- Center Fellow, Center on Food Security and the Environment, Stanford University, (2009- present)
- Associate Director, Center on Food Security and the Environment, Stanford University, (2012-2014)
- Deputy Director, Center on Food Security and the Environment, Stanford University, (2014- present)
- Assistant Professor, Environmental Earth System Science, Stanford University, (2009- present)

HONORS AND AWARDS

- NAS Food and Agriculture Prize, National Academy of Sciences (2022)
- Outstanding Student Paper Award, American Geophysical Union Fall Meeting (1999)
- Honorary Doctorate, Brown University (2021)
- Graduate Research Fellowship, NSF (2000-2004)
- Carbon, Climate and Society Initiative Fellowship, NSF Integrative Graduate Education and Research Training (2001-2002)
- Best of Session Award, ERIM Conference on Geospatial Information in Agriculture and Forestry (2001)
- Graduate Student Fellowship, EPA Science to Achieve Results (2004)
- Graduate Student Fellowship, NASA Earth System Science (2004)
- Lawrence Fellowship, Lawrence Livermore National Laboratory (2005-2008)
- NASA New Investigator Program Award, NASA (2008-2011)
- Google Science Communication Fellow, Google (2010)
- James B. Macelwane Medal, American Geophysical Union (2010)
- Terman Fellow, Stanford University (2011-2014)
- Macarthur Fellow, Macarthur Foundation (2014-2018)
- Sir Frederick McMaster Fellowship, CSIRO, Australia (2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Advisor, Global Commission on Adaptation (2018 - 2023)
- Editorial Advisory Board Member, Global Food Security (2012 - 2019)
- Core Writing Team Member, IPCC Working Group 2 Summary for Policy Makers (2012 - 2014)
- Editor, Global Change Biology (2011 - 2017)
- Committee on Assessing the Impact of Climate Change on Political and Social Stresses, Member of National Academy of Sciences (2011 - 2012)
- Member of Technical Advisory and Review Panel, World Bank Group activities related to climate change adaptation (2011 - 2012)
- Advisory committee for Haas center, Stanford University (2010 - present)
- Fellow, American Geophysical Union (2010 - present)
- Lead Author, IPCC Working Group 2, "Food Production Systems and Food Security" (2010 - 2014)

- Stanford Interdisciplinary Graduate Fellowship review committee, Stanford University (2010 - 2013)
- Woods Institute Environmental Venture Project proposal review committee, Stanford University (2010 - 2013)
- Carnegie Institution Dept. of Global Ecology Search Committee, Stanford University (2010 - 2010)
- EESS department seminar organizer, Stanford University (2010 - 2010)
- Earth Systems Executive Committee, Land Track Leader, Stanford University (2009 - present)
- Earth Systems masters advisor, Stanford University (2009 - present)
- Goldman Honors Program Advisory Committee, Stanford University (2009 - present)
- Editorial Board Member, Environmental Research Letters (2009 - 2013)
- Member, National Academy of Sciences Committee on Stabilization Targets for Atmospheric Greenhouse Gas Concentrations (2009 - 2010)
- Associate Editor, Journal of Environmental Quality (2008 - 2010)
- Panel on Climate, Energy, and Security, Panel on Climate, Energy, and Security (2008 - 2008)
- Workshop on Remote Sensing for Human Welfare, National Academy of Sciences (2006 - 2006)
- Member, American Society of Agronomy (2005 - present)
- Land Cover Land Use Change Grant Review Panel, NASA (2005 - 2005)
- Member, American Geophysical Union (2000 - present)

PROFESSIONAL EDUCATION

- Ph.D., Stanford University , Geological and Environmental Sciences (2005)
- Sc.B., Brown University , Applied Mathematics (2000)

PATENTS

- David Lobell. "United States Patent 9,953,241 Systems and Methods for Satellite Image Processing to Estimate Crop Yield", Apr 24, 2018

LINKS

- Lobell Lab: http://lobell-lab.stanford.edu/
- (FSE) Food Security and the Environment: http://foodsecurity.stanford.edu/people/david_lobell/
- Atlas AI: https://www.atlasai.co/
- David Lobell's Twitter: http://twitter.com/DavidBLobell
- G-Feed: Global Food, Environment and Economic Dynamics: http://www.g-feed.com/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research

I study the interactions between food production, food security, and the environment using a range of modern tools. Current work focuses on three main areas of research: how to effectively adapt agriculture to climate change, how to reduce yield gaps in major cropping regions, and how to quantify environmental consequences of biofuel and food crop production. A common theme is the use of large datasets to constrain and improve models that represent our understanding of how the world works. Prospective students interested in food security, climate change, and/or how to combine models and large datasets in creative ways are encouraged to contact me.

Teaching

I regularly teach three courses open to both undergraduate and graduate students. One is Fundamentals of Modeling (EESS 211), which is a hands-on introduction to environmental modeling concepts and techniques, taught every year. Second is Feeding Nine Billion (ES185), an introduction to basics of crop ecology and agronomy, world crop production systems, and tradeoffs associated with various new practices or technologies, also taught every year (starting in 2013). Third is Climate and Agriculture (ES184) which covers different aspects of climate change impacts on food production and food security, and is taught every other year (next in 2015).

Professional Activities

Current activities in 2012: Lead author for IPCC Fifth Assessment Report; Member of National Academy of Science committee on "Assessing the Impact of Climate Change on Political and Social Stresses"; Member of Technical Advisory and Review Panel for World Bank Group activities related to climate change adaptation; Editor for Global Change Biology and Associate Editor for Environmental Research Letters; numerous academic and public lectures

PROJECTS

- Use of Climate Information in International Negotiations for Adaptation Resources - Stanford University
- Quantification and reduction of uncertainties in projections of climate impacts on drought and agriculture for North America - Stanford (8/1/2011 - 7/31/2015)
- Evaluating Climate Adaptation Options in African Agriculture - Stanford University (1/1/2011 - 10/31/2014)
- Interdisciplinary Research on Introducing Heat-Tolerant Wheat to Bolster Food Security - Stanford University (8/1/2014 - 7/31/2017)
- Using Remote Sensing to Close the Corn Yield Gap in Northern China - Stan
- Prioritizing Investments in Food Security Under a Changing Climate - Stanford University (2008 - present)

Teaching

COURSES

2026-27

- Feeding Nine Billion: EARTHSYS 185 (Win)
- Rethinking Meat: An Introduction to Alternative Proteins: EARTHSYS 209, ESS 103, ESS 203, ETHICSOC 107 (Spr)

2025-26

- Feeding Nine Billion: EARTHSYS 185 (Win)
- Rethinking Meat: An Introduction to Alternative Proteins: EARTHSYS 109, EARTHSYS 209, ESS 103, ESS 203, ETHICSOC 107 (Spr)

2024-25

- Feeding Nine Billion: EARTHSYS 185 (Win)
- Rethinking Meat: An Introduction to Alternative Proteins: EARTHSYS 109, EARTHSYS 209, ESS 103, ESS 203, ETHICSOC 107 (Spr)

2023-24

- Data for Sustainable Development: CS 325B, EARTHSYS 162, EARTHSYS 262 (Aut)
- Feeding Nine Billion: EARTHSYS 185 (Win)
- Rethinking Meat: An Introduction to Alternative Proteins: EARTHSYS 109, EARTHSYS 209, ESS 103, ESS 203, ETHICSOC 107 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Ivan Higuera-Mendieta

Postdoctoral Faculty Sponsor

Melanie Gittard

Doctoral Dissertation Advisor (AC)

Siddharth Sachdeva

Master's Program Advisor

Ben Kingston

Publications

PUBLICATIONS

- **Wheat resilience under compound stress.** *Nature food*
  Lin, X., Lobell, D. B., Liu, B., Tang, L.
  2026
- **STaPL: Scale Transfer with Pseudo-Labelling for satellite-based mapping of agricultural practices** *REMOTE SENSING OF ENVIRONMENT*
  Ma, Y., Shen, Y., Swatantran, A., Kelly, C., Lobell, D. B.
  2026; 343
- **Harvesting AlphaEarth: Benchmarking the geospatial foundation model for agricultural downstream tasks** *INTERNATIONAL JOURNAL OF APPLIED EARTH OBSERVATION AND GEOINFORMATION*
  Ma, Y., Shen, Y., Swatantran, A., Lobell, D. B.
  2026; 149
- **Dynamic, high-resolution poverty measurement in data-scarce environments** *JOURNAL OF DEVELOPMENT ECONOMICS*
  Zheng, Z., Wu, T., Lee, R., Newhouse, D., Kilic, T., Burke, M., Ermon, S., Lobell, D. B.
  2026; 179
- **Measuring impacts of California agri-environmental programs using field-scale satellite data** *ENVIRONMENTAL RESEARCH LETTERS*
  Wong, C. A., Abramson Sklarin, W. S., Mauter, M. S., Lobell, D. B.
  2026; 21 (1)
- **Scalable Vision-Guided Crop Yield Estimation**
  Li, H. H., Irgau, M., Janmohamed, N., Rieckmann, K., Lobell, D. B.
  edited by Koenig, S., Jenkins, C., Taylor, M. E.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2026: 615-622
- **Precrop payoffs: causal machine learning reveals large but variable yield benefits of crop rotation in major breadbaskets** *ENVIRONMENTAL RESEARCH LETTERS*
  Kluger, D. M., Di Tommaso, S., Lobell, D. B.
  2025; 20 (11)
- **Evaluating restoration success: long-term impact of sustainable land management practices in Ethiopia using synthetic control with matrix completion method** *ENVIRONMENTAL RESEARCH LETTERS*
  Weldegebriel, L. T., Kluger, D. M., Lobell, D. B.
  2025; 20 (8)
- **The mixed effects of recent cover crop adoption on US cropland productivity** *NATURE SUSTAINABILITY*
  Lobell, D. B., Di Tommaso, S., Zhou, Q., Ma, Y., Specht, J., Guan, K.
  2025
- **Crop productivity in southern Africa is stagnant despite moderate climate trends.** *Nature food*
  Lobell, D. B., Lee, R. J.
  2025
- **Field-scale mapping of California crop water productivity to inform water management in critically overdrafted groundwater basins** *ENVIRONMENTAL RESEARCH LETTERS*
  Wong, C. A., Lobell, D. B., Mauter, M. S.

2025; 20 (7)

- **Climate-driven global cropland changes and consequent feedbacks** *NATURE GEOSCIENCE*
  You, N., Till, J., Lobell, D. B., Zhu, P., West, P. C., Kong, H., Li, W., Sprenger, M., Villoria, N. B., Li, P., Yang, Y., Jin, Z.
  2025
- **A half-century of climate change in major agricultural regions: Trends, impacts, and surprises.** *Proceedings of the National Academy of Sciences of the United States of America*
  Lobell, D. B., Di Tommaso, S.
  2025; 122 (20): e2502789122
- **Relaxing Credit and Information Constraints: Five-Year Experimental Evidence from Tanzanian Agriculture** *ECONOMIC DEVELOPMENT AND CULTURAL CHANGE*
  Tamim, A., Harou, A. P., Burke, M., Lobell, D., Madajewicz, M., Magomba, C., Michelson, H., Palm, C. A., Xue, J.
  2025
- **Large increases in public R&D investment are needed to avoid declines of US agricultural productivity.** *Proceedings of the National Academy of Sciences of the United States of America*
  Ortiz-Bobea, A., Chambers, R. G., He, Y., Lobell, D. B.
  2025; 122 (11): e2411010122
- **To enhance sustainable development goal research, open up commercial satellite image archives.** *Proceedings of the National Academy of Sciences of the United States of America*
  Rufin, P., Meyfroidt, P., Akinyemi, F. O., Estes, L., Ibrahim, E. S., Jain, M., Kerner, H., Lisboa, S. N., Lobell, D., Nakalembe, C., Persello, C., Picoli, M. C., Ribeiro, et al
  2025; 122 (7): e2410246122
- **Quantifying the impact of air pollution from coal-fired electricity generation on crop productivity in India.** *Proceedings of the National Academy of Sciences of the United States of America*
  Singh, K., Lobell, D. B., Azevedo, I. M.
  2025; 122 (6): e2421679122
- **PlantationBench: a multiscale, multimodal remote sensing benchmark for plantation mapping under distribution shift**
  Tsao, A., Lobell, D., IEEE COMPUTER SOC
  IEEE COMPUTER SOC.2025: 2965-2975
- **ExPLoRA: Parameter-Efficient Extended Pre-Training to Adapt Vision Transformers under Domain Shifts**
  Khanna, S., Irgau, M., Lobell, D. B., Ermon, S.
  edited by Singh, A., Fazel, M., Hsu, D., Lacoste-Julien, S., Berkenkamp, F., Maharaj, T., Wagstaff, K., Zhu, J.
  JMLR-JOURNAL MACHINE LEARNING RESEARCH.2025: 29799-29818
- **Subfield-level crop yield mapping without ground truth data: A scale transfer framework** *REMOTE SENSING OF ENVIRONMENT*
  Ma, Y., Liang, S., Myers, D., Swatantran, A., Lobell, D. B.
  2024; 315
- **Towards transferable building damage assessment via unsupervised single-temporal change adaptation** *REMOTE SENSING OF ENVIRONMENT*
  Zheng, Z., Zhong, Y., Zhang, L., Burke, M., Lobell, D. B., Ermon, S.
  2024; 315
- **Knowledge informed hybrid machine learning in agricultural yield prediction** *COMPUTERS AND ELECTRONICS IN AGRICULTURE*
  von Bloh, M., Lobell, D., Asseng, S.
  2024; 227
- **Uniting remote sensing, crop modelling and economics for agricultural risk management (vol 2, pg 140, 2021)** *NATURE REVIEWS EARTH & ENVIRONMENT*
  Benami, E., Jin, Z., Carter, M. R., Ghosh, A., Hijmans, R. J., Hobbs, A., Kenduiywo, B., Lobell, D. B.
  2024
- **Changes in the Yield Effect of the Preceding Crop in the US Corn Belt Under a Warming Climate.** *Global change biology*
  Zhou, J., Zhu, P., Kluger, D. M., Lobell, D. B., Jin, Z.

2024; 30 (11): e17556

- **Mapping sugarcane globally at 10 m resolution using Global Ecosystem Dynamics Investigation (GEDI) and Sentinel-2** *EARTH SYSTEM SCIENCE DATA*
  Di Tommaso, S., Wang, S., Strey, R., Lobell, D. B.
  2024; 16 (10): 4931-4947
- **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
  2024; 385 (6713): eadn3747
- **Observational evidence for groundwater influence on crop yields in the United States.** *Proceedings of the National Academy of Sciences of the United States of America*
  Deines, J. M., Archontoulis, S. V., Huber, I., Lobell, D. B.
  2024; 121 (36): e2400085121
- **Opportunities and Barriers for Agrivoltaics on Tribal Lands** *SUSTAINABILITY*
  Moore, K. A., Lobell, D. B.
  2024; 16 (13)
- **Eyes in the sky on Tigray, Ethiopia - Monitoring the impact of armed conflict on cultivated highlands using satellite imagery** *SCIENCE OF REMOTE SENSING*
  Weldegebriel, L., Negash, E., Nyssen, J., Lobell, D. B.
  2024; 9
- **Further adoption of conservation tillage can increase maize yields in the western US Corn Belt** *ENVIRONMENTAL RESEARCH LETTERS*
  Cambron, T. W., Deines, J. M., Lopez, B., Patel, R., Liang, S., Lobell, D. B.
  2024; 19 (5)
- **HARVESTING INSIGHTS FROM CROP DATA** *ISSUES IN SCIENCE AND TECHNOLOGY*
  Lobell, D.
  2024; 40 (3)
- **Agricultural Productivity and Climate Mitigation** *ANNUAL REVIEW OF RESOURCE ECONOMICS*
  Fuglie, K. O., Hertel, T. W., Lobell, D. B., Villoria, N. B.
  2024; 16: 21-40
- **HarvestNet: A Dataset for Detecting Smallholder Farming Activity Using Harvest Piles and Remote Sensing**
  Xu, J., Elmustafa, A., Weldegebriel, L., Negash, E., Lee, R., Meng, C., Ermon, S., Lobell, D., IEEE
  IEEE COMPUTER SOC.2024: 5366-5374
- **HarvestNet: A Dataset for Detecting Smallholder Farming Activity Using Harvest Piles and Remote Sensing**
  Xu, J., Elmustafa, A., Weldegebriel, L., Negash, E., Lee, R., Meng, C., Ermon, S., Lobell, D.
  edited by Wooldridge, M., Dy, J., Natarajan, S.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2024: 22438-22446
- **The weekly cycle of photosynthesis in Europe reveals the negative impact of particulate pollution on ecosystem productivity.** *Proceedings of the National Academy of Sciences of the United States of America*
  He, L., Rosa, L., Lobell, D. B., Wang, Y., Yin, Y., Doughty, R., Yao, Y., Berry, J. A., Frankenberg, C.
  2023; 120 (49): e2306507120
- **Transfer learning in environmental remote sensing** *REMOTE SENSING OF ENVIRONMENT*
  Ma, Y., Chen, S., Ermon, S., Lobell, D. B.
  2024; 301
- **Multicriteria Suitability Index for Prioritizing Early-Stage Deployments of Wastewater-Derived Fertilizers in Sub-Saharan Africa.** *Environmental science & technology*
  Wong, C. A., Lobell, D. B., Mauter, M. S.
  2023

- **Canopy Height Mapping for Plantations in Nigeria Using GEDI, Landsat, and Sentinel-2** *REMOTE SENSING*
  Tsao, A., Nzewi, I., Jayeoba, A., Ayogu, U., Lobell, D. B.
  2023; 15 (21)
- **Warming temperatures exacerbate groundwater depletion rates in India.** *Science advances*
  Bhattarai, N., Lobell, D. B., , Fishman, R., Kustas, W. P., Pokhrel, Y., Jain, M.
  2023; 9 (35): eadi1401
- **Annual Field-Scale Maps of Tall and Short Crops at the Global Scale Using GEDI and Sentinel-2** *REMOTE SENSING*
  Di Tommaso, S., Wang, S., Vajipey, V., Gorelick, N., Strey, R., Lobell, D. B.
  2023; 15 (17)
- **Soil micronutrients linked to human health in India.** *Scientific reports*
  Morton, C. M., Pullabhotla, H., Bevis, L., Lobell, D. B.
  2023; 13 (1): 13591
- **Sustainable irrigation and climate feedbacks.** *Nature food*
  Yang, Y., Jin, Z., Mueller, N. D., Driscoll, A. W., Hernandez, R. R., Grodsky, S. M., Sloat, L. L., Chester, M. V., Zhu, Y., Lobell, D. B.
  2023
- **Reduced benefits of climate-smart agricultural policies from land-use spillovers** *NATURE SUSTAINABILITY*
  Lobell, D. B., Villoria, N. B.
  2023
- **Field-scale dynamics of planting dates in the US Corn Belt from 2000 to 2020** *REMOTE SENSING OF ENVIRONMENT*
  Deines, J. M., Swatantran, A., Ye, D., Myers, B., Archontoulis, S., Lobell, D. B.
  2023; 291
- **Optimal index insurance and basis risk decomposition: an application to Kenya** *AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS*
  Stigler, M., Lobell, D.
  2023
- **Recent cover crop adoption is associated with small maize and soybean yield losses in the United States.** *Global change biology*
  Deines, J. M., Guan, K., Lopez, B., Zhou, Q., White, C. S., Wang, S., Lobell, D. B.
  2022
- **Unlocking Large-Scale Crop Field Delineation in Smallholder Farming Systems with Transfer Learning and Weak Supervision** *REMOTE SENSING*
  Wang, S., Waldner, F., Lobell, D. B.
  2022; 14 (22)
- **Higher levels of no-till agriculture associated with lower PM2.5 in the Corn Belt** *ENVIRONMENTAL RESEARCH LETTERS*
  Behrer, A., Lobell, D.
  2022; 17 (9)
- **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
- **Globally ubiquitous negative effects of nitrogen dioxide on crop growth** *SCIENCE ADVANCES*
  Lobell, D. B., Di Tommaso, S., Burney, J. A.
  2022; 8 (22)
- **Early- and in-season crop type mapping without current-year ground truth: Generating labels from historical information via a topology-based approach** *REMOTE SENSING OF ENVIRONMENT*
  Lin, C., Zhong, L., Song, X., Dong, J., Lobell, D. B., Jin, Z.
  2022; 274
- **Combining randomized field experiments with observational satellite data to assess the benefits of crop rotations on yields** *ENVIRONMENTAL RESEARCH LETTERS*

Kluger, D. M., Owen, A. B., Lobell, D. B.
2022; 17 (4)

- **Mapping Sugarcane in Central India with Smartphone Crowdsourcing** *REMOTE SENSING*
  Lee, J., Wang, S., Figueroa, A., Strey, R., Lobell, D. B., Naylor, R. L., Gorelick, S. M.
  2022; 14 (3)
- **Evaluating maize yield response to fertilizer and soil in Mexico using ground and satellite approaches** *FIELD CROPS RESEARCH*
  Campolo, J., Ortiz-Monasterio, I., Guerena, D., Lobell, D. B.
  2022; 276
- **IS-Count: Large-Scale Object Counting from Satellite Images with Covariate-Based Importance Sampling**
  Meng, C., Liu, E., Neiswanger, W., Song, J., Burke, M., Lobell, D., Ermon, S., Assoc Advancement Artificial Intelligence
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2022: 12034-12042
- **Combining GEDI and Sentinel-2 for wall-to-wall mapping of tall and short crops** *ENVIRONMENTAL RESEARCH LETTERS*
  Di Tommaso, S., Wang, S., Lobell, D. B.
  2021; 16 (12)
- **Prior crop season management constrains farmer adaptation to warming temperatures: Evidence from the Indo-Gangetic Plains.** *The Science of the total environment*
  Ishtiaque, A., Singh, S., Lobell, D., Singh, B., Fishman, R., Jain, M.
  2021: 151671
- **Two shifts for crop mapping: Leveraging aggregate crop statistics to improve satellite-based maps in new regions** *REMOTE SENSING OF ENVIRONMENT*
  Kluger, D. M., Wang, S., Lobell, D. B.
  2021; 262
- **The impact of groundwater depletion on agricultural production in India** *ENVIRONMENTAL RESEARCH LETTERS*
  Bhattarai, N., Pollack, A., Lobell, D. B., Fishman, R., Singh, B., Dar, A., Jain, M.
  2021; 16 (8)
- **Twice Is Nice: The Benefits of Two Ground Measures for Evaluating the Accuracy of Satellite-Based Sustainability Estimates** *REMOTE SENSING*
  Lobell, D. B., Di Tommaso, S., Burke, M., Kilic, T.
  2021; 13 (16)
- **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)
- **Using Sentinel-1, Sentinel-2, and Planet Imagery to Map Crop Type of Smallholder Farms** *REMOTE SENSING*
  Rao, P., Zhou, W., Bhattarai, N., Srivastava, A. K., Singh, B., Poonia, S., Lobell, D. B., Jain, M.
  2021; 13 (10)
- **Scalable deep learning to identify brick kilns and aid regulatory capacity.** *Proceedings of the National Academy of Sciences of the United States of America*
  Lee, J., Brooks, N. R., Tajwar, F., Burke, M., Ermon, S., Lobell, D. B., Biswas, D., Luby, S. P.
  2021; 118 (17)
- **Anthropogenic climate change has slowed global agricultural productivity growth** *NATURE CLIMATE CHANGE*
  Ortiz-Bobea, A., Ault, T. R., Carrillo, C. M., Chambers, R. G., Lobel, D. B.
  2021; 11 (4): 306-U28
- **A million kernels of truth: Insights into scalable satellite maize yield mapping and yield gap analysis from an extensive ground dataset in the US Corn** *REMOTE SENSING OF ENVIRONMENT*
  Deines, J. M., Patel, R., Liang, S., Dado, W., Lobell, D. B.
  2021; 253
- **Uniting remote sensing, crop modelling and economics for agricultural risk management** *NATURE REVIEWS EARTH & ENVIRONMENT*

Benami, E., Jin, Z., Carter, M. R., Ghosh, A., Hijmans, R. J., Hobbs, A., Kenduiywo, B., Lobell, D. B.
2021; 2 (2): 140-159

- **Evaluation of soil-dependent crop yield outcomes in Nepal using ground and satellite-based approaches** *FIELD CROPS RESEARCH*
  Campolo, J., Guerena, D., Maharjan, S., Lobell, D. B.
  2021; 260
- **Geography-Aware Self-Supervised Learning**
  Ayush, K., Uzkent, B., Meng, C., Tanmay, K., Burke, M., Lobell, D., Ermon, S., IEEE
  IEEE.2021: 10161-10170
- **Efficient Poverty Mapping from High Resolution Remote Sensing Images**
  Ayush, K., Uzkent, B., Tanmay, K., Burke, M., Lobell, D., Ermon, S., Assoc Advancement Artificial Intelligence
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2021: 12-20
- **Predicting Livelihood Indicators from Community-Generated Street-Level Imagery**
  Lee, J., Grosz, D., Uzkent, B., Zeng, S., Burke, M., Lobell, D., Ermon, S., Assoc Advancement Artificial Intelligence
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2021: 268-276
- **Using satellite imagery to understand and promote sustainable development.** *Science (New York, N.Y.)*
  Burke, M., Driscoll, A., Lobell, D. B., Ermon, S.
  2021; 371 (6535)
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PRESENTATIONS

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