Emma Krasovich Southworth, MPH

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EDUCATION

Stanford University, Doerr School of Sustainability — *Palo Alto, CA*
P.h.D student, Emmett Interdisciplinary Program in Environment and Resources (E-IPER) — 2022 – present
Co-advisors: Dr. Erin Mordecai, Dr. Marshall Burke

University of California, Berkeley — *Berkeley, CA*
Continuing education — 2019 – 2022
Courses: Principles of Epidemiology, Machine Learning with R, Linear Algebra & Differential Equations, Microeconomics, Environmental Law, Spatial Data & Analysis, Econometrics

Columbia University, Mailman School of Public Health — *New York, NY*
MPH, Environmental Health Sciences — 2015 – 2017
Global Health Certificate
Thesis: Downstream Impacts from Upstream Actions: The Toll of Food Production on Water Quality and Health Outcomes in Sub-Saharan Africa

Colgate University — *Hamilton, NY*
B.A, Neuroscience, Minor in Biology — 2011 – 2015
Thesis: Behavioral Effects of Chronic Low-Dose Exposure to the Environmental Water Pollutant Venlafaxine (Effexor) on the crayfish species Orconectus rusticus

SELECTED PROFESSIONAL EXPERIENCE

Global Policy Lab, Goldman School of Public Policy, UC Berkeley — *Berkeley, CA*
Research Analyst, Quantitative Sustainable Development Project — 2019 – 2022

- Assisted on a project that monitored the natural capital of an industrial-scale Maori Land Trust in New Zealand by estimating the market value of non-tradable assets (e.g. soil) and the non-market value of non-market capital investments (e.g. community development)
- Developed a spatial model that employs public data to identify land-based sources of nonpoint source pollution in national-scale river networks and estimated annual nutrient loads for nitrogen and phosphorus compounds in New Zealand and the US Mississippi River Basin
- Constructed a statistical approach to harmonize 9 million US water quality observations spanning 40 years and 265 agencies to address long-standing data quality issues
- Co-authored a *Nature* publication estimating the causal impact of non-pharmaceutical interventions on COVID-19 spread in China, Korea, Iran, Italy, France, and United States; conducted an epidemiological literature review; collated over 1,100 US COVID-19 policies

Hazen and Sawyer — *New York, NY*
Environmental Scientist/Proposal Coordinator — 2018 – 2019

- Contributed to an environmental health impact assessment aimed at guiding water quality interventions and policy decisions for the NYC Department of Environmental Protection
- Led 30+ funding proposals which involved designing and writing content that won environmental engineering projects ranging in value from $100K - $60M

Pure Earth, formerly Blacksmith Institute *New York, NY*
Environmental Health Research and Programs Intern Feb – Jun 2017

- Analyzed an air pollution time series to assess the effectiveness of a pilot program aimed at reducing air pollution from burning e-waste in Ghana
- Drafted funding proposals, abstracts, newsletters, and technical reports documenting the relationship between pollution and health in low- and middle-income countries (LMICs)

Project Concern International (MPH Practicum) *Zomba, Malawi*
Water, Sanitation and Hygiene (WASH) Fellow, Njira Project Jul – Dec 2016

- Collected and analyzed WASH data for over 30,000 households to provide an assessment of local programming and develop a framework for resource prioritization
- Piloted a USAID-funded project to investigate the relationship between sanitation status and the prevalence of diarrheal disease using village clinic data

Agriculture & Food Security Center, Earth Institute, Columbia University *New York, NY*
Agriculture and Food Security Research Intern Feb – May 2016

- Analyzed demographic, spatial, and environmental data from field surveys of over 1,000 households to create a tool that provided fertilizer recommendations for African farmers

Dept. of Environmental Health Sciences, Columbia University *New York, NY*
Graduate Research Assistant under Dr. Norman Kleiman 2015 – 2016

- Drafted a NIH grant proposal and designed a survey to explore dietary arsenic consumption as a biomarker of eye pathology in cataract patients

PEER REVIEWED PUBLICATIONS

[*] Indicates corresponding author.
[†] Indicates that authors contributed equally

1. **Krasovich, E.**[*], Lau, P., Tseng, J., Longmate, J., Bell, K., Hsiang, S. (2022) Harmonized nitrogen and phosphorous concentrations in the Mississippi/Atchafalaya River Basin from 1980 to 2018. *Scientific Data* 9, no. 1 (2022): 1-17. (Link)

2. Hsiang, S.[†*], Allen, D.[†], Annan-Phan, S.[†], Bell, K.[†], Bolliger, I.[†], Chong, T.[†], Druckenmiller, H.[†], Huang, L.Y.[†], Hultgren, A.,[†] **Krasovich, E.**[†] and Lau, P.[†], 2020. The effect of large-scale anti-contagion policies on the COVID-19 pandemic. *Nature*, 584(7820), pp.262-267. (Link)

WORKING PAPERS

1. The impact of monocropping on dengue in Costa Rica. **Krasovich Southworth, E.,** Glidden, C., Skinner, E., Vargas, I., Troyo Rodriguez, A., Rojas Araya, D., and Mordecai, E.

2. The influence of wildfire smoke on ambient $PM_{2.5}$ chemical species concentrations in the contiguous US. **Krasovich Southworth**, E., Qiu, M., Gould, C., Kawano, C., Wen, J., Heft-Neal, S., Kilpatrick Voss, K., Lopez, A., Fendorf, S., Burney, B., and Burke, M.
3. Kawano, A., Wen, K., Gould, C., Qiu, M., Burke, M., Burney, J., Heft-Neal, S., Voss, K., Hand, J.

4. Who is responsible for damaging the commons? Identifying nonpoint source polluters in national-scale river networks. Lau, P., Longmate, J., **Krasovich Southworth, E.**, Tseng, J., Bell, K., Sum, S., and Hsiang, S.

CONFERENCES & PRESENTATIONS

Krasovich Southworth, E., Lau, P., Tseng, J., Longmate, J., Bell, K., Hsiang, S. Managing national scale water pollution requires harmonized water quality data. Oral presentation at Data Science 4 Sustainability Conference, Stanford University. April 2023.

Krasovich Southworth, E., Kawano, A., Wen, J., Gould, G., Qiu, M., Heft-Neal, S., Lopez, A., Burke, M., Burney, J., Fendorf, S., Kilpatrick Voss, K. What's in wildfire smoke + what data science has to do with it. Oral presentation at the Exploring Intersections in Health, Sustainability, and Data Science Conference, Stanford University, November 2023.

Krasovich Southworth, E., Kawano, A., Wen, J., Gould, G., Qiu, M., Heft-Neal, S., Lopez, A., Burke, M., Burney, J., Fendorf, S., Kilpatrick Voss, K. The chemical composition of wildfire smoke in the contiguous US from 2006 to 2020. Oral presentation at AGU 2023, San Francisco. December 2023.

AWARDS

Stanford Data Science Scholars (2-year tuition stipend at 50%) 2023-2025
Data Science Scholars are a select group of current Stanford PhD students from all disciplines who are contributing to data-intensive science, whether through discoveries using data science (in the traditional sciences or other fields) or through enhanced data-science techniques (via computational, statistical or mathematical research, for example). Over the two-year period in the program, Scholars are provided with 50% of their compensation to support their research and are involved in regular meetings for discussion of individual research and important topics in data science; planning the annual Data Science conferences on campus; and kickstarting ambitious projects to advance data science for the community at Stanford and beyond.

E-IPER Summer Research Grant ($3,837) 2023
E-IPER Research Grants are awarded to support research activities, including travel, field supplies, equipment, and other expenses directly related to research that advances degree progress.

1st Place, Best Student Presentation Awards ($750) 2023
Data for Sustainability Conference, Stanford University

Enhancing Diversity in Graduate Education (EDGE) Fellowship ($6,000) 2022 – 2025
EDGE Doctoral Fellowships are awarded to incoming doctoral students, who are nominated by their degree program after they are admitted.

NSF Graduate Research Fellowship Program (3-year tuition stipend) 2022 – 2027
The Graduate Research Fellowship Program (GRFP) is a National Science Foundation-wide program that provides Fellowships to individuals selected early in their graduate careers based on

their demonstrated potential for significant research achievements in science, technology, engineering or mathematics or in STEM education.

Casper Mills Scholarship ($4,000) 2022 – 2025

Jewish Vocational Services Scholarship ($14,000) 2015 – 2017, 2022 – 2025

Dean's Award, Colgate University 2014 – 2015

Beta Beta Beta Biological Honor Society 2013 – 2015

TEACHING

Stanford University, Disease Ecology 2024
Stanford University, Global Change and Emerging Infectious Diseases 2023
Columbia University, Risk Assessment & Environmental Chemistry 2017
Columbia University, Environmental Determinants of Health 2017
Hospital Universitario de Canarias (Tenerife), ESL Instructor 2014
Colgate University, General Chemistry Laboratory 2012 – 2013

TECHNICAL SKILLS

Languages & Tools: R, Google Earth Engine, Python, Matlab, Git, QGIS/ArcGIS, LaTeX
Quantitative Methods: causal inference, geospatial analysis, machine learning, econometrics

SERVICE & EXTRACURRICULAR INVOLVEMENT

E-IPER Social Committee - Student Leadership Council, Stanford University 2024 – 2025
E-IPER Alumni Liaison - Student Leadership Council, Stanford University 2023 – 2024
Project: Planet Speaker Series, Stanford University (co-founder) 2023 – present
LeadX Fellow, Stanford University 2023
E-IPER Alumni Liaison - Student Leadership Council, Stanford University 2022 – 2024
UC Berkeley Equity Training Series, Participant 2021 – 2022
aeroTRIV (aerotriv.com), Co-Founder & Co-host 2020 – present
GirLAB, Captain 2020 – 2024
Strawberry Canyon Track Club, Board Member; DEI Committee; Editor 2019 – 2020
EcoWomen; Member 2018 – 2020

REFERENCES

Dr. Marshall Burke
Associate Professor, Doerr School of Sustainability
Deputy Director at the Center on Food Security and the Environment;
Principal Investigator of the Environmental Change and Human Outcomes Lab
Stanford University
650-721-2203; mburke@stanford.edu

Dr. Erin Mordecai
Associate Professor, Biology
Senior Fellow at the Woods Institute for the Environment
Stanford University
650-497-7447; emordeca@stanford.edu

Dr. Solomon Hsiang
Chancellor's Professor of Public Policy; Director of the Global Policy Lab
Goldman School of Public Policy
University of California, Berkeley
510-643-5751; shsiang@berkeley.edu

Dr. Jeffrey Shaman
Professor of Environmental Health Sciences;
Director of the Climate and Health Program
Mailman School of Public Health
Columbia University Medical Center
212-305-3590; jls106@columbia.edu

Dr. Peiley Lau
Environmental Economist
National Center for Environmental Economics, U.S. Environmental Protection Agency
408-616-0286; lau.peiley@epa.gov