Simon Greenhill

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Education

University of California, Berkeley

PhD in Agricultural and Resource Economics — In progress
MS in Agricultural and Resource Economics — 2022
BA in Economics and Arabic — 2018
High Distinction in General Scholarship
High Honors in Economics

Fields of interest

Environmental economics, machine learning for remote sensing, development economics, international trade

Research works in progress

Flippers in flood-exposed housing markets: Intermediaries, information, and the flood risk capitalization puzzle
(solo-authored; winner of the 2022 Sidney Hoos Award)

- Research question: Do homes that are bought and sold in a short period of time, or "flipped," capitalize flood risk more or less than homes that are not flipped?
- Methods and data: I use data on over 20 million housing transactions and high-dimensional fixed effects to estimate the difference in flood risk capitalization between flipped and non-flipped homes.
- Policy relevance: Mispriced climate-exposed assets could deter climate change mitigation and adaptation. Asset price corrections could amplify the direct effects of climate change. My study investigates a mechanism that could be causing mispricing in the U.S. real estate market, suggesting specific policy levers that could help rectify the mispricing.
- My contributions: Conceived of, designed, and implemented all aspects of the research.
- Draft available upon request.

Mass production of global-scale maps using satellite imagery and machine learning
(with Tamma Carleton, Trinetta Chong, Hannah Druckenmiller, Taryn Fransen, Solomon Hsiang, Jessica Katz, Hikari Murayama, Jonathan Proctor, Luke Sherman, and Jeanette Tseng)

- Research question: Can a single featurization produce reliable predictions for over 100 labels?
- Methods and data: We develop a pipeline for predicting over 100 labels using satellite imagery and MOSAIKS. Labels include measures of land use, geology, and human development.
- Policy relevance: We develop a toolkit for making remote sensing predictions that does not require special training or access to expensive computing infrastructure.
- My contributions: Develop and maintain a pipeline for efficiently and reliably tuning a MOSAIKS model for any label. Analyze model outputs, with a focus on characterizing error structures.
- Draft in preparation.

What does the Clean Water Act regulate?
(with David Keiser, Manuela Girotto, Jason Moore, Joseph S. Shapiro, Alberto Todeschini, Sherrie Wang, and Nobu Yamaguchi)

- Research question: What fraction of the U.S. is regulated under different Clean Water Act (CWA) rules? How does the CWA's jurisdiction change under different regulatory regimes?

- Methods and data: We use data on over 150,000 regulatory designations in combination with satellite imagery, vector and raster data, and tabular data to train ResNets and random forests. We predict regulatory status for all the bodies of water in the continental United States under different CWA rules.
- Policy relevance: To date, analysis has been unable to quantify how contentious changes to the CWA made by different White Houses and the Supreme Court affect the Act's jurisdiction. Our analysis is the first to quantify the difference between rules. We additionally develop a decision support tool to help determine locations' regulatory status more easily.
- My contributions: Develop and deploy neural networks; analyze results and report findings.
- Analysis in progress.

Research experience

Graduate Student Researcher for Joseph S. Shapiro, UC Berkeley	2022-present
Graduate Student Researcher for Solomon Hsiang, UC Berkeley	2021-present
Doctoral Fellow, Global Policy Laboratory, UC Berkeley	2020-present
Graduate Student Researcher for Maximilian Auffhammer, UC Berkeley	2020-2021
Pre-Doctoral Fellow, Energy Policy Institute at Chicago and Climate Impact Lab	2018-2020

Service

Mentor, Initiative on Equity in Energy and Environmental Economics	2022-present
Technical Contributor, Economics Chapter, 5th National Climate Assessment	2021-present
Student Representative, UC Berkeley ARE Committee on Diversity, Equity, and Inclusion	2021-present

Honors and awards

Sidney Hoos Award for best second year paper, UC Berkeley ARE	2022
M.J. Vlamis Graduate Student Support Fund awardee, UC Berkeley RCNR	2022
Phi Beta Kappa, UC Berkeley	2018

Skills

Programming languages	Python, R, Stata (advanced); Bash (basic)
World languages	French (bilingual), Spanish (advanced), Arabic (proficient)
Software	LaTeX(advanced); QGIS/ArcGIS (intermediate)