

## **TIMOTHY FOREMAN**

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### **Office Contact Information**

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### **Academic Positions**

Postdoc, RFF-CMCC European Institute on Economics and the Environment, June 2019 - present  
Adjunct Professor, IE University, September 2019 – May 2020

### **Undergraduate Studies**

BS Applied Mathematics, Columbia University, *Magna cum laude*, 2013

### **Graduate Studies**

Columbia University, 2013 - 2019

Ph.D. Sustainable Development

Thesis Title: “Essays on the Economics of Environmental Change”

### **Programming Languages**

Proficient: Python (numpy, pandas, scikit-learn), R, Matlab, Stata

Basic: Java, PHP, HTML

### **Teaching Experience**

Fall 2019	Mathematics for Economists, IE University, Instructor
Spring 2017	Political Development in the Developing World, Columbia University, Teaching fellow for Professor Christopher Sabatini
Fall 2016	Research Methods and Quantitative Techniques in Public Management and Policy, Columbia University, Teaching fellow for Professor Selcuk Eren
Spring 2016	Microeconomics Policy and Analysis, Columbia University, Teaching fellow for Professor Selcuk Eren
Fall 2015	Intermediate Microeconomics, Columbia University, Teaching fellow for Professor Prajit Dutta
Spring 2015	Microeconomics Policy and Analysis, Columbia University, Teaching fellow for Professor Kitty Chan
Fall 2014	Microeconomics Policy and Analysis, Columbia University, Teaching fellow for Professor Suresh Naidu

### **Professional Activities**

Referee Demography

Presentations Aarhus University, Department of Economics and Business Economics, Aarhus, Denmark; Wegener Center for Climate and Global Change, Graz, Austria; Austrian Economic Association (NOeG) Winter Workshop, Vienna, Austria; International Conference on Sustainable Development, New York, NY; International Workshop on Sand/Dust Storms and Associated Dustfall, Tenerife, Spain; Sustainable Development Research Symposium; Eastern Economic Association, Boston, MA

Co-organizer Interdisciplinary PhD Workshop in Sustainable Development, 2016

## **Fellowships**

2018 - 2019      Dissertation Fellowship, Columbia University  
2013 - 2018      Dean's Fellowship, Columbia University

## **Published Works**

Sachs, J., Rising, J., **Foreman, T.**, Simmons, J., and Brahm, M. 2015. "The Impacts of Climate Change on Coffee: Trouble Brewing" <http://eicoffee.net/>

Raymond, C., **Foreman, T.**, King, A., Kornhuber, K., Lesk, C., Mora, C., Perkins-Kirkpatrick, S., Russo, S., and Vijverberg, S. 2018. "Projections and hazards of future extreme heat." In *Planning for Climate Change Hazards*. Oxford University Press.  
<https://dx.doi.org/10.1093/oxfordhb/9780190455811.013.59>

## **Research Papers**

*"The Effects of Dust Storms on Economic Development"*

Dust storms are a common occurrence for populations residing in semi-arid environments and can result in a variety of immediate and long-term impacts. While previous literature documents many of these short-term effects, such as increases in various respiratory issues (e.g. asthma attacks, suffocation) and increases in traffic accidents (resulting from disrupted transportation networks), this is the first study to use exogenous variation in dust exposure due to long-range transport to study the effects of dust storms on economic activity. I instrument local dust values using dust observed over the Bodélé Depression of the Sahara Desert, the largest dust source in the world. I show that economic growth in West Africa is reduced by 3% per standard deviation increase in dust exposure over 2 years. Agricultural yields decline in the year of impact on average by 2%. The effects found here could be a contributing factor to reduced economic development in West Africa, and indicate that dust storms should be considered an important part of geographic endowments alongside other climate indicators.

*"The Effect of Dust Storms on Child Mortality"* (Submitted)

While the health impacts of dust have been studied in high-income countries, little is known about the health effects of dust storms in the regions of the world most exposed. In this paper, I study the effects of dust storms on child mortality using reanalysis data on surface-level dust concentrations and household health data from the Demographic and Health Surveys. I use dust observed over the Bodélé Depression in the Sahara Desert - the world's largest dust source - as well as wind speed and direction to estimate the quantity of natural dust exposure. I then use this transported dust to instrument for the dust over the location where the child is born, thus overcoming potential endogenous increases in dust exposure due to economic conditions. I find that a one standard deviation increase in dust exposure at month of birth decreases the probability a child survives to age 5 by .33 percentage points. This estimate implies that about 10% of all child mortality observed in the sample can be attributed to dust exposure.

*"Predicting Areas of Agricultural Expansion"*

Climate change is threatening to reduce crop yields in many of the areas currently supporting a large fraction of the world's food production. While there are a range of adaptation measures that could be taken, one of the most natural is to relocate production to areas that may be becoming more suitable to agricultural activity. While this is a crucial element in climate change adaptation, few papers have considered how this will happen and where new crops will be grown, as this requires assumptions about the productivity of land that has not been used for agriculture. Rather than estimating production of new agricultural land directly, this paper uses machine learning methodologies that take advantage of high-resolution crop and climate data in the United States to predict where crop expansions will take place based on past expansion patterns. This process improves upon past attempts to predict crop choices using only logit models, and provides insight into which parcels of land are most likely to experience land use changes.

### **Works in Progress**

Cattaneo, C. and **Foreman, T.** “Climate Change, International Migration, and Interstate Conflict.”

Baker, R., Carleton, T., D'Agostino, A., **Foreman, T.**, Greenstone, M., Hsiang, S., Hultgren, A., Jina, A., Kopp, R., Pecenco, M., Rising, J., Rode, A., and Yuan, J. “Human Productivity in a Warmer World: The Impact of Climate Change on the Global Workforce.”

**Foreman, T.** “Environmental Shocks and the Decision to Migrate.”

### **Languages**

English (native)

German (advanced - C1)

French (basic - A2)