



NEWSLETTER Volume 8, Issue 1

Fall 2018

The ***Climate and Health Program***, launched in 2008, has a mission to foster innovative scholarship on the human health dimensions of climate change impacts and vulnerabilities, and to provide information of direct value in climate adaptation and mitigation planning. We train PhD and DrPH students, and postdoctoral scientists in the design and conduct of cutting edge research on mechanisms linking climate to ill-health as well as on methods for assessing health impacts and benefits of future climate policy scenarios. We also offer the first ever MPH certificate in climate and health.

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## PROGRAM NEWS

### ***Faculty in the news***



Darby Jack on **VICE News**

*City Cyclists: Here's How Much Pollution You're Actually Inhaling*

Equipped with a spandex biometric shirt and a vest holding two air quality monitors — one measuring black carbon, the other PM 2.5 — VICE News set off on a day of bike riding over New York City's bridges, down its greenways, and through its crowded rush-hour streets, to find out one thing: how much air pollution cyclists are actually inhaling.

Read the article [here](#).



Frederica Perera on **KPFA Radio Station**

*Pollution from Fossil-Fuel Combustion is the Leading Environmental Threat to Global Pediatric Health and Equity: Solutions Exist*

Fossil-fuel combustion by-products are the world's most significant threat to children's health and future, and are major contributors to global inequality and environmental injustice.

Listen to the interview [here](#).

### ***GCCHE launch online knowledge bank***



The Global Consortium on Climate and Health Education (GCCHE) launched a new online knowledge bank. GCCHE is a network of over 170 health professions schools and programs aiming to stimulate growth of the emerging field by creating a virtual town square in which schools can share climate-health education resources and develop a global standard for knowledge on the health impacts of climate change. The knowledge bank features links to resources that are publicly available online including slides, videos, and online courses; curricular guidance, upcoming events, textbooks, articles, and reports; and opportunities such as internships and jobs, funding, and calls for papers.

See the knowledge bank [here](#), and read the press release [here](#).

### ***Stephen Lewandowski promoted to Lieutenant Colonel***



The U.S. Army selected second-year PhD student, Stephen Lewandowski, for promotion to the rank of Lieutenant Colonel. He serves as an environmental science and engineering officer in the Medical Service Corps branch.

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## New staff as of spring 2018



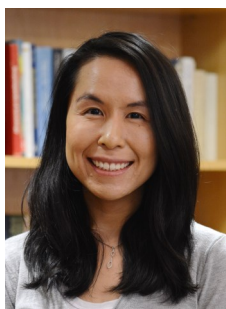
**Jesús Cantu**  
Research Associate

Jesús received his BA in Sociology from Princeton University and is the Martinez Lab Manager and Research Associate. He is interested in transmission dynamics and control of infectious diseases, as well as implementation of cutting-edge epidemiological/statistical modelling in the analysis of big data for use in population health management. His previous research has focused on measuring the impact of migration on varicella transmission along the US-Mexico border. He analyzed the relationship between changing infant vaccination and breastfeeding rates and the incidence of flu-related hospitalizations among US children. At Columbia, he is building a dynamic transmission model to estimate the efficacy of the varicella vaccine.



**Katherine Crocker**  
Postdoctoral Research  
Fellow

Katherine earned her PhD in Ecology and Evolutionary Biology at the University of Michigan. There, she developed crickets as a model system to research the mechanisms and consequences of inherited non-genetic effects, particularly those resulting from dietary stress and social conditions. At Columbia, she is working to identify effects of food insecurity and parental stress on the descendants of the stressed individuals. Her current work combines computational epigenetics with laboratory studies on vertebrate and invertebrate species. The goal is to identify environmental risk factors that can have disproportionately negative future effects, which in turn can be used to inform public health policy and approaches.



**Jacqueline Leung**  
Postdoctoral Research  
Scientist

Jacqueline earned her PhD in Ecology and Evolutionary Biology at Princeton University. She is interested in understanding why hosts are so heterogeneous in their immune responses to infection. Her doctoral research examined ecological interactions between helminths and microbes in the vertebrate gut and their consequences for host health and disease. At Columbia, she is characterizing seasonal and circadian rhythms in the human immune system to determine whether functional changes in immune responses occur throughout the year that may impact susceptibility to disease.

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## Staff transitions



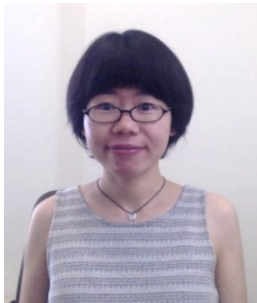
**Katrin Burkart**  
Postdoctoral Research  
Scientist

Katrin received her doctorate from the Humboldt Universität zu Berlin, Germany. At Columbia, her research aimed at projecting future heat-related mortality in Bangladesh under different climate change scenarios, considering trends such as population aging, epidemiological transition, and urbanization. In recent studies, she highlighted interactive effects between air pollution and high temperatures and pointed at the role of urban vegetation in heat effect mitigation. Currently, she is Assistant Professor at the Institute for Health Metrics and Evaluation at University of Washington.



**Nicholas DeFelice**  
Postdoctoral Research  
Scientist

Nick completed his postdoctoral research and is now Assistant Professor in the Department of Environmental Medicine and Public Health at Mount Sinai. His research focused on developing dynamic disease transmission models using data assimilation methods to generate ensemble-based predictions of West Nile virus. At Mount Sinai, his work will focus on developing quantitative approaches to understand environmental risk, specifically to elucidate roles that air pollution, infrastructure, climate, and ecology play within disease transmission.



**Wan Yang**  
Associate Research  
Scientist

Wan Yang joined the Department of Epidemiology as Assistant Professor starting July. In the Department of Environmental Health Sciences as Associate Research Scientist, she developed forecast systems to predict infectious disease outbreaks and studied how climate and environmental factors influence the transmission, seasonality, and underlying mechanisms of influenza. She was recently awarded an National Institute of Health R03 grant entitled 'Inferring Shifts in Susceptibility and Cross Protection to Influenza from (Sub)typed Incidence Data.'

## CERTIFICATE NEWS

### *Second years' summer practicum experiences*



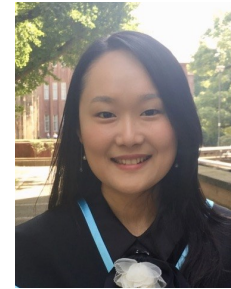
**Jessica Brown** worked for New Yorkers for Parks, a nonprofit that conducts research on open space in NYC and helps communities advocate for open space. She was the graduate intern on the field research team leading 5 interns to survey for open space in Bushwick, Long Island City, and Staten Island. They collected information on parks, community gardens, construction sites, and vacant lots. Currently these areas are being rezoned and the data we collected will be used to form reports, which will then be given to community boards and advocates for park space in these neighborhoods.



**Erica Chung** worked at the Collaborative on Health and Environment, a non-profit environmental advocacy group, on their Because Health project as a health communications intern. Over the course of 13-weeks, she conducted environmental literature research and translated the material into engaging and approachable material for the general public ranging from topics such as leaded pipes, obesogens, and volatile organic compounds.



**Sonal Jessel** was as a graduate research assistant for Dr. Diana Hernandez the Department of Sociomedical Sciences. She worked on a study in the South Bronx aimed at understanding what residents would want to see in a smoke-free policy in their building. She surveyed residents and installed air quality monitoring devices in apartments around the neighborhood. She also spent the summer conducting a robust conceptual review of household energy insecurity research around the world and is currently writing a manuscript.



**Erin Kawazu** worked as an intern at the World Health Organization Regional Office of the Western Pacific in Manila, Philippines this past summer. Based primarily in the Health and the Environment technical unit, she provided input for the unit's publications and took part in a research project on two environmental health disasters in the Region.

## CERTIFICATE NEWS

### *Second years' summer practicum experiences*



**Stella Keck** worked as a Health Research Training Program graduate intern through the NYC Department of Health and Mental Hygiene at the Research and Evaluation Unit, Bureau of Epidemiology Services. She expanded her GIS skills by learning spatial analysis and mapping techniques in R and ArcMap. She worked on a variety of projects including developing tools and training materials to automate downloading, cleaning, and storing City datasets as well as creating custom geographies, streamlining spatial data acquisition and dissemination, and completing various map requests.



**Susan Lloyd** spent her summer practicum at the NYC Department of Health and Mental Hygiene supporting the foodborne illness team in the Bureau of Communicable Disease. She conducted patient and provider interviews and assisted with cluster and outbreak investigations of salmonella, shigella, and listeria in NYC.



**Sydney Wolchuk** worked at the Office of the New York State Attorney General as their graduate science intern in the Summer Law Internship Program. She worked closely with the chief scientist, bureau chief, and many of the environmental lawyers in the NYC office's Environmental Protection Bureau. She conducted scientific research on future or ongoing investigations, drafted affidavits, briefed the staff, wrote reports and fact sheets, analyzed scientific and engineering data, and aided in other environmental and legal issues. She took away many invaluable experiences and skills that will prepare her for and further her in her future career as an environmental lawyer.

## RESEARCH

### Awards

**Professor Micaela Martinez** was awarded the National Institute of Environmental Health Sciences Center for Environmental Health in Norther Manhattan Pilot Grant (\$30,000) to study the 'Influence of Light Pollution & Light-at-night on the Circadian Clock.'

**Professor Jeffrey Shaman** and his team, including Drs. Jonathan Nichols, Simon Anthony, Natalie Boelman, and Dorothy Peteet, were awarded \$80,000 through the 2018 Research Initiatives in Science and Engineering (RISE) competition for their proposal on 'Evolution in the Arctic: Genomic reconstruction of microbial, plant and animal communities during the Holocene.'

**Professor Marianthi-Anna Kioumourtzoglou** will receive \$1,819,818 over four years from the National Institute of Environmental Health Sciences for 'Principal Component Pursuit to Assess Exposure to Environmental Mixtures in Epidemiologic Studies.'

**Professor Darby Jack** and co-investigator, **Carlos Gould**, were awarded a grant by Clean Cooking Implementation Science Network with support from the United States National Institutes of Health Common Fund program for Global Health on 'Building Capacity to Evaluate Clean Cooking in Ecuador.'

**Professor Marianthi-Anna Kioumourtzoglou** received an award from National Institute of Environmental Health Sciences to study 'Air Pollution Exposure and Risk of Amyotrophic Lateral Sclerosis (ALS).'

**Doctoral student, Mike He**, was awarded an F31 from National Institutes of Health for his study on 'Assessing Current and Future Health Impacts of Fine Particulate Matter in China and the United States.'

### Recent finding

#### Government policy, clean fuel access, and persistent fuel stacking in Ecuador

*Affiliated Investigators: Carlos Gould and Darby Jack*

*Journal: Energy for Sustainable Development*



LPG is Ecuador's main primary cooking fuel due to long-standing government subsidies. However, the large fiscal burden of the LPG subsidy and other factors have led the Government of Ecuador to launch a major induction stove program (PEC) to reduce the demand for LPGs. Gould et al. assessed the effects of the LPG subsidies and PEC using government records, interviews, academic literature, newspaper reports, household surveys, and focus groups. They found that induction cookstove uptake fell short at 21% of the program goal of 3.5 million. Further, more than three-quarters of those surveyed in rural households reported secondary woodfuel use, suggesting that surveying solely on primary cooking fuel may underestimate solid fuel use.

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## Recent publications

- Biggerstaff M, Johansson M, Alper D, Brooks LC, Chakraborty P, Farrow DC, Hyun S, **Kandula S**, McGowan C, Ramakrishnan N, Rosenfeld R. Results from the second year of a collaborative effort to forecast influenza seasons in the United States. *Epidemics*. 2018 Feb 24.
- DeFelice NB**, Schneider ZD, Little E, Barker C, Caillouet KA, Campbell SR, Damian D, Irwin P, Jones HM, Townsend J, **Shaman J**. Use of temperature to improve West Nile virus forecasts. *PLoS computational biology*. 2018 Mar 9;14(3):e1006047.
- Garland C, **Gould CF**, Pennise D. Usage and impacts of the Envirofit HM-5000 cookstove. *Indoor air*. 2018 Mar 25.
- Sun Q, Wang W, Chen C, Ban J, Xu D, Zhu P, **He MZ**, Li T. Acute effect of multiple ozone metrics on mortality by season in 34 Chinese counties in 2013–2015. *Journal of internal medicine*. 2018 May;283(5):481-8.
- Crocker KC**, Hunter MD. Environmental causes and transgenerational consequences of ecdysteroid hormone provisioning in *Acheta domesticus*. *Journal of insect physiology*. 2018 Jun 8.
- Gould CF**, Chillrud SN, Phillips D, Perzanowski MS, Hernández D. Soot and the city: Evaluating the impacts of Clean Heat policies on indoor/outdoor air quality in New York City apartments. *PloS one*. 2018 Jun 28;13(6):e0199783.
- Shea B, Knowlton K, Shaman J**. The need for informed climate-health governance. *International Journal of Health Governance*. 2018 Jun 28.
- Birger R, Morita H, Comito D**, Filip I, **Galanti M, Lane B, Ligon C**, Rosenbloom D, **Shittu A, Ud-Dean M**, Desalle R, Planet P, **Shaman J**. Asymptomatic Shedding of Respiratory Virus among an Ambulatory Population across Seasons. *mSphere*. 2018 Jul;3(4).
- Kandula S, Yamana T, Pei S, Yang W, Morita H, Shaman J**. Evaluation of mechanistic and statistical methods in forecasting influenza-like illness. *Journal of The Royal Society Interface*. 2018 Jul 1;15(144):20180174.
- Morita H, Kramer S, Heaney A**, Gil H, **Shaman J**. Influenza forecast optimization when using different surveillance data types and geographic scale. *Influenza and other respiratory viruses*. 2018 Jul 20.
- Reis J, Yamana T, Kandula S, Shaman J**. Superensemble forecast of respiratory syncytial virus outbreaks at national, regional, and state levels in the United States. *Epidemics*. 2018 Jul 9.
- Asante KP, Afari-Asiedu S, Abdulai MA, Dalaba MA, **Carrión D**, Dickinson KL, Abeka AN, Sarpong K, **Jack DW**. Ghana's rural liquefied petroleum gas program scale up: A case study. *Energy for Sustainable Development*. 2018 Jul 7.
- Gould CF**, Jagoe K, Moreno AI, Verastegui A, Pilco V, García J, Fort A, Johnson M. Prevalent degradation and patterns of use, maintenance, repair, and access to post-acquisition services for biomass stoves in Peru. *Energy for Sustainable Development*. 2018 Aug 31;45:79-87.
- Doms C, **Kramer SC, Shaman J**. Assessing the Use of Influenza Forecasts and Epidemiological Modeling in Public Health Decision Making in the United States. *Scientific reports*. 2018 Aug 17;8(1):12406.



## PAST EVENTS

### ***Models of Infectious Disease Agent Study Meeting***

Ten members of Professor Jeffrey Shaman's lab attended the annual meeting of the Models of Infectious Disease Agent Study (MIDAS) in May. Sen Pei, a postdoc, gave a talk on simulation and inference of the colonization, importation and nosocomial transmission of Methicillin-Resistant Staphylococcus aureus. Ruthie Birger, Nick DeFelice, Marta Galanti, Sasi Kandula, Sarah Kramer, Israel Ukawuba, Teresa Yamana, and Wan Yang each presented posters on diseases ranging from HIV to influenza to West Nile virus to measles.



### ***Planetary Health Annual Meeting***

Brittany Shea, Project Director of the Global Consortium on Climate and Health Education (GCCHE), gave a poster presentation during the 2018 Planetary Health Annual Meeting in Edinburgh, Scotland in May. The poster abstract, by Shea and Professors Kim Knowlton and Jeffrey Shaman, showed preliminary results from a baseline survey of current climate-health education among international health professions schools as part of the efforts of GCCHE.



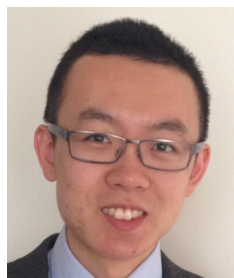
### ***Cary Institute visit***

In June, Postdocs Ruthie Birger, Marta Galanti, Teresa Yamana, and Nick DeFelice visited the Cary Institute of Ecosystem Studies to give an invited talk at their lunch seminar series. Each presented on their infectious disease modeling work. They enjoyed a visit to Fishkill Farms on their way back.



### ***ISEE-ES Asia Chapter Conference***

PhD candidate, Mike He, and Professor Marianthi Kioumourtzoglou attended the International Society for Environmental Epidemiology Asia Chapter Conference in Taipei in June. He presented a poster titled 'Short- and Intermediate-Term Exposure to NO2 and Mortality in 42 Chinese Counties.'



### ***EEID Conference***

Professors Jeffrey Shaman and Micaela Martinez and postdoc Ruthie Birger attended the 16th Ecology and Evolution of Infectious Disease Conference in May at the University of Glasgow in Scotland, UK. Birger presented a poster titled 'Data Assimilation Methods for a Within-Host Model of Pediatric HIV Dynamics.'



## PAST EVENTS

### ***ISES-ISEE Annual Meeting***

Several Climate and Health Program members attended the ISES-ISEE 2018 Joint Annual Meeting in Ottawa, Canada this August. Two doctoral students presented posters: Sebastian Rowland on 'Temperature Variability and Risk of Stroke in New York' and Carlos Gould on 'Liquefied Petroleum Gas as a Clean Cooking Fuel: Adoption and Use in Rural India.' Daniel Carrion, PhD candidate, gave an oral presentation on 'Examining the Relationship between Household Air Pollution and Infant Nasal Carriage.'



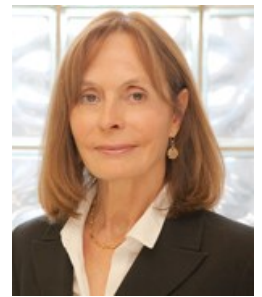
### ***Animal Behavior Society Annual Conference***

Katherine Crocker, postdoctoral research fellow, attended the Animal Behavior Society at University of Wisconsin Milwaukee in August. She gave a talk on 'Evidence for maternal hormone provisioning as an adaptive response to social density in an insect.'



### ***Global Climate Action Summit***

Professor Ricky Perera gave a presentation entitled 'Air Pollution from Fossil-Fuel Combustion and Children's Health: Benefits of Action' at the Global Climate Action Summit in September in San Francisco, CA.



### ***PAHO/WHO Workshop***

Carlos Gould, PhD candidate, was invited to give a talk at the Pan American Health Organization/World Health Organization workshop on solid fuels and kerosene for cooking in September in Mexico City, Mexico. His talk was entitled 'Política gubernamental, acceso a combustible limpio y la persistencia del uso de biomasa en Ecuador' (Government policy, clean fuel access, and persistent biomass use in Ecuador).



## FEEDBACK

Please email the Program Coordinator, Haruka Morita, at [hm2487@cumc.columbia.edu](mailto:hm2487@cumc.columbia.edu) with questions or suggestions for future newsletter content. For more information about the Program, please visit our [website](#).