



NEWSLETTER Volume 2, Issue 2

Spring 2013

Welcome to the First Cohort of Climate and Health Certificate Candidates!



Sun Young Jeong, from Laguna Niguel, CA, studied Molecular Cell Biology at UC Berkeley. Her research focused on how local environmental changes affect reproductive physiology of photoperiodic songbirds. At

Columbia, she is excited to bridge her former research experiences in climate health with public health.



Claire Shea from Ann Arbor, MI, studied Evolutionary Anthropology and Environmental Studies at University of Michigan. She is interning as an environmental researcher at the nonprofit Human Rights Watch. She looks

forward to getting involved with research and taking advantage of the opportunities provided by the Earth Institute and the Institute for Climate and Society.

Climate and Health Seminars

The Climate and Health Program has been sponsoring periodic seminars for faculty, staff and students in the program, as well as outside partners. In the fall of 2012, the seminars were held monthly with speakers that included:

Oct. 16 – Pat Kinney, Director of Columbia Climate and Health Program: IPCC Report authorship

Nov. 20 – Elisaveta Petkova, DrPH candidate: Temperature and mortality in NYC

Dec. 18 – Joel Schwartz, Professor of Environmental Epidemiology at the Harvard School of Public Health: Challenges and opportunities in estimating the direct effects of climate on health

In the spring semester of 2013, seminars will occur weekly on Thursdays from 3-4:30pm in the EHS conference room (room 1101), and will welcome the new MPH Climate and Health certificate students.

Seminar topics for the spring seminar series include:

- Air Pollution
- Temperature Epidemiology
- Vector-borne/Tropical Infectious Disease
- Climate modeling

Hurricane Sandy may have long-term impacts on public health

November 6, 2012



Dr. Patrick Kinney discussed some of the health impacts from Hurricane Sandy, including spoilage of food from power outages, lack of routine medical care, leaking of raw sewage into the NYC rivers, and mobilization of toxic chemicals on the streets. Further, with NYC being densely populated, “you have a lot more people in harm’s way.”

Read full article [here](#).

Many Factors Contribute to Flu

December 3, 2012



Dr. Jeffrey Shaman talked about the link between flu emergence and absolute humidity on NBC’s Nightly News interview aired online. He said that studies have shown that absolute humidity is strongly linked with survival and transmission of the flu virus in temperate regions. As the planet warms with climate change, it is certain that the temperature and absolute humidity will increase; however it is uncertain how this will play out in Earth’s complex system. He has generated forecast models of flu in NYC and hopes to issue weekly flu forecasts.

See interview [here](#).

Read articles on [NBCNEWS.com](#), [Environmental News Network](#), and [CBS DC](#).

The Budding Health Care Costs of Climate Change

December 10, 2012



Dr. Kim Knowlton, raised challenges in quantifying costs of health care from natural disasters, like Hurricane Sandy, which may become more frequent with the projected changes in climate. She mentions that it is particularly difficult because of the challenges in linking the health effects to the hurricane, as health conditions do not develop immediately. “There is no set methodology widely recognized to put these number together.”

Read full article [here](#).

On-Going Projects

Early in 2013, **Drs. Darby Jack and Patrick Kinney** and PhD student, **Ashlinn Quinn**, will be kicking off a new randomized trial of clean-burning cook stoves as a cost-effective intervention to improve infant health



outcomes from birth through one year of age in Ghana, Africa. The project will enroll 1100 mother/infant pairs over the next three years, and examine effects of cooking smoke on birth weight as well as pneumonia in early life. Over half the world's population relies on smoky solid fuels to meet their daily energy needs, an exposure that has been estimated by WHO to result in upwards of 1.6 million premature deaths each year.

James Tamerius, a postdoctoral research scientist and an Earth Institute fellow, is working with **Dr. Jeffrey Shaman** to identify potential transmission "hotspots" that may be located in subways, cafes, buses and other public spaces in NYC by sampling for common respiratory viruses. They aim to improve our understanding of the mechanisms that drive transmission of respiratory pathogens, such as influenza and the viruses responsible for the common cold. They are also exploring the effects of humidity and other environmental factors on the viability of the pathogens and transmission processes.



Ying Li, a postdoctoral research scientist, is working with **Drs. Patrick Kinney and Darby Jack** to assess the public health impacts of fine particulate matter (PM_{2.5}) in the U.S. They are focusing on



quantifying premature mortality among adults in the continental U.S. associated with long-term exposure to ambient black carbon, a significant component of PM_{2.5}. The aim is to inform the development of the most cost-effective control strategies to reduce total PM_{2.5}-related premature mortality.

Wan Yang, a postdoctoral research scientist, is developing a number of models and data assimilation systems for generating skillful, short-term (5-day to 3-month) predictions of epidemic influenza with **Dr. Jeffrey Shaman**. They incorporate observations of influenza incidence into mathematical models of influenza transmission dynamics to project influenza virus outbreaks and hope to use these models to issue flu forecasts.



Recent Findings

The Role of Weather in Meningitis Outbreaks in Navrongo, Ghana: A Generalized Additive Modeling Approach

Affiliated Investigator: Madeleine Thomson



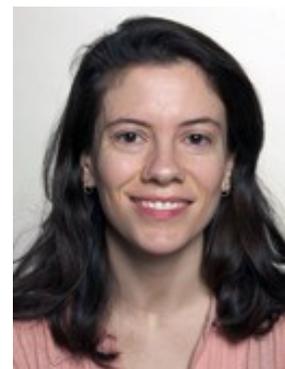
Bacterial (meningococcal) meningitis outbreaks occur annually during the dry season between December and May in the ‘meningitis belt’ of Africa. High temperatures coupled with low humidity are hypothesized to favor the conversion of benign meningococcal meningitis bacteria in the nose and throat to a pathogen by damaging the mucosa and lowering the immune defense. The relationship between weather and meningitis is particularly highlighted within the context of climate change, where global warming and altered precipitation patterns may favor conditions for meningitis spread. This paper assessed the association between the number of reported meningitis cases and various weather variables over 11 years in Navrongo, Ghana. The models pointed to the relevance of weather and pollution variables (i.e current month’s average maximum temperature and previous month’s relative humidity and CO emissions due to fires), and conclude that weather is robustly responsible for explaining some of the variation in meningitis counts.

Learn more about the study [here](#).

Climate Change and Children’s Health—A Call for Research on What Works to Protect Children

Affiliated Investigator: Perry Sheffield

Climate change affects children’s health through increased air pollution, more weather-related disasters, more frequent and intense heat waves, decreased water quality and quantity, food shortage and greater exposure to toxicants. As a result, children experience greater risk of mental disorders, malnutrition, infectious diseases, allergic diseases, and respiratory diseases. We strongly need mitigation measures like reducing carbon pollution emissions, and adaptation measures such as early warning systems and post-disaster counseling. To this end, future children’s health research should focus on: 1) identifying whether climate change impacts are modified by gender, age, and socioeconomic status; 2) refining outcome measures of vulnerability to climate change; 3) projecting disease burden under climate change scenarios; 4) exploring disease burden related to climate change in low-income countries; and 5) identifying the most cost-effective mitigation and adaptation actions for children.



Learn more about the study [here](#).

Fellow Highlight

Jaime Madrigano, postdoctoral Earth Institute fellow

Jaime is working with Dr. Kinney and the NYC Department of Health and Mental Hygiene on assessing vulnerability to heat-related mortality in NYC. She is also working on quantifying health and climate benefits from NYC policies and initiatives. Her dissertation work at Harvard University focused on mechanisms and modifiers in the association between air pollution, temperature, and health. A paper from that work entitled "Temperature, Myocardial Infarction, and Mortality: Effect Modification by Individual and Area-Level Characteristics" was recently accepted for publication in the journal *Epidemiology*.



Goldmann Student Merit Award

Haruka Morita, MPH, a recent alumna of the Mailman School of Public Health, the Climate and Health Program coordinator, received the Goldmann Student Merit Award from the Public Health Association of New York City (PHANYC) at the Annual Award Ceremony at the Interchurch on November 14, 2012. She received this award for her paper entitled "Climate Change Impacts on Plant Phenology," which was originally written for a class taught by Dr. Patrick Kinney called Climate Change Impacts on Public Health she took as a graduate student. Her paper highlights the impacts of increasing temperature and atmospheric carbon dioxide concentrations on plant phenology, and how this impact can lead to increasing respiratory illnesses.



Learn more about PHANYC [here](#).

Consortium for Climate Risk in the Urban Northeast (CCRUN) Annual Meeting

Dr. Patrick Kinney, Jaime Madrigano (postdoctoral student), and **Haruka Morita** (Program Coordinator), attended the Annual Meeting for CCRUN at Drexel University in Philadelphia on November 8th and 9th. CCRUN conducts stakeholder-driven research that reduces climate-related vulnerability and advances opportunities for adaptation in the urban Northeast (Boston to New York City to Philadelphia). Dr. Kinney, Jaime, and Haruka are a part of the Health sector, which focuses on health impacts of climate change; other sectors include Water and Coasts. The Health team from the Columbia Climate and Health Program is focusing on assessing effects of heat on mortality as well as vulnerability indicators in NYC. Future areas of study for CCRUN include impacts from Hurricane Sandy.



Read more about CCRUN [here](#).

Emerging Climate Findings



A new page was recently added to our website: *Emerging Climate Findings*. This page is updated monthly with global, national, and local climate and health findings and serves as a news resource targeted towards the lay community.

View the site [here](#).

Partner Newsletters



Please check out newsletters from our partners:

International Research Institute for Climate and Society: [Climate Information for Public Health Action Newsletter](#)

Environmental Health Sciences Department (available mid-February): [EHS Newsletter](#)

Feedback



Please email the Program Coordinator, Haruka Morita, at hm2487@columbia.edu with questions and suggestions about future newsletter content.

For more information about the Program, please visit our [website](#).