

Climate Change and Public Health: Heat, Fire, Flood and Drought

July 27-August 14, 2020



Course Instructors:

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Course Overview:

In this course participants will have the opportunity to explore firsthand how climate change is impacting public health in urban environments and rural communities in Mongolia. Scientists are learning plenty every day about how climate change affects our oceans, forests, waters, and food security. But we are also quickly expanding knowledge on how climate change directly and significantly affects human health and well-being. Through short lectures, readings, site visits and conversations, we'll learn how shifts in heat days, incidence of wildfire, flood and drought can and are impacting heat stroke, depression, pulmonary disease, vector borne disease, food security and other health issues in Mongolia and in other areas of the world.

Climate change is expected to have a disproportionate impact on countries with lower incomes, on northern regions, and on indigenous peoples worldwide. Mongolia is an excellent laboratory to witness firsthand the impacts climate change is having on the health of individuals, communities and the environment, and how people are working to mitigate these impacts and adapt to a changing global climate. Mongolia has experienced an average temperature rise of over 2 degrees, more than double the world average, and has a sustained indigenous population that faces a changing socio-economic situation that is complicated by climate change. You'll come away from this course with a good understanding of health issues and climate change in Mongolia and other parts of the world, and how climate and health sciences overlay to paint a picture of our health future.

The class will start with discussions with government, health and climate leaders in Ulaanbaatar, then travel to the countryside to see how climate change is impacting traditional nomadic

practices and public health delivery in rural areas. We'll meet with natural resource managers, public health officials, herders, climate scientists and community members in facilitated conversations. We'll learn about rural community clinics and observe recorded changes in the landscape.

The impacts of climate change on health are many, including increased mortality related to cardiovascular and respiratory conditions and heat stress, more premature births, rises in rates of depression, spread of infectious disease, and higher morbidity and mortality from gastrointestinal disease during extreme weather events, to name but a few. The literature and recent global reports point to many climate-related events as the culprits, including increased wildfire (pulmonary disease and asthma), more heat days (heat stroke and depression), early runoff and flood (vector borne disease), and summer drought (and related winter dzud and food security issues). Other factors at play are limited access to rural health facilities and poor communication between climate and health scientists and the communities in which they work.

In lectures, conversation and readings, with plenty of time to learn and explore on your own. Each student will have the opportunity to explore a topic of their own interest, and as a group we'll learn more about issues such as:

- What is a climate health assessment?
- How do we understand the uncertainty around this?
- What are the global and local trends with regard to extreme heat, extreme cold, drought, flooding, fires and smoke?
- How does climate change affect health globally? A review of what we now know are the impacts of climate change on global health concerns.
- How are vulnerable populations especially impacted?
- What are the demographic and socioeconomic trends in Mongolia and current trends in health status/services?
- What can we say about climate-change related health issues in Mongolia with respect to extreme heat, wildfires/smoke, floods and vector borne disease, drought and food security, etc.?
- What actions can health agencies, rural clinics, and health certification programs take to respond and adapt to climate change, and what messaging will be most effective for clinics and communities, community planning, monitoring, policy change, and personal action?

This course is a great fit for those interested in climate science, environmental studies, global health, public health, health disparity research, ecotourism, community engagement, and policy development, all as we assess together our collective global climate future.

Anticipated Course Activities

July 27 - July 30: Course and Program orientation in Ulaanbaatar. Gain an introduction to Mongolian culture and language, history and contemporary issues. Meet course faculty and participants, begin course sessions with agency meetings and review of air quality issues, and engage in team building through visits to local sites such as Gandan Monastery, markets, museums, and hikes.

July 31 – August 13: Travel to rural areas in north central Mongolia where we will visit small community health centers, meet local officials working to deliver health services to a rural population, and talk with herders and other local people about the challenges climate change is bringing to traditional lifestyles and health. We plan to stay in ger camps in the area of the ancient capital of Mongolia, Kharkhorin, and Tsetserleg, the capitol of Arkhangai province. These locations will be updated over the next few weeks. We will explore the landscape and historic sites, and visit local town centers and rural areas to talk with experts and herders. During our travel route, we'll observe how Mongolia's ecosystem has altered as a result of climate change and shifting human activity in the forest-steppe, steppe, and semi-desert; and how these shifts can and do impact human health. We'll take some time to explore the local cultural and natural attractions as well. We will return to Ulaanbaatar on August 13 to prepare for the final ACMS Field School event.

August 14 – Final ACMS Field School wrap up conference in Ulaanbaatar. Participants will have the opportunity to meet with students from other field school courses to share observations and information gathered in the countryside, and to plan for further research and explorations in Mongolia and beyond.

About the Instructors:



Dr. Cathy Whitlock is a Regents Professor in Earth Sciences at Montana State University and a Fellow of the Montana Institute on Ecosystems. She is also the lead author of the 2017 Montana Climate Assessment. Cathy is nationally and internationally recognized for her scholarly contributions and leadership activities in the field of past climatic and environmental change. She has published over 200 scientific papers on the ecological history of Yellowstone and similar regions around the world. Cathy is a Fellow of the Geological Society of America and the American Association for the Advancement of Science, and in 2018, she became the first person from a Montana university to be elected to the National Academy of Sciences.



Susan Higgins, MS, engages in water resources planning, landscape collaboratives and drought resiliency. She has consulted with the Center for Large Landscape Conservation, The Tributary Fund and The Taimen Fund, where she facilitated research activities, leadership exchanges and species and drought resiliency planning in Mongolia, Bhutan and Montana, all with an emphasis on developing best practices for scientists working with faith and indigenous communities. Prior, she directed research communications and water education at the Montana State University Water Center. Susan now works to connect health science researchers with rural and Native Montana communities for the Center for American Indian and Rural Health Equity.

Other Instructors TBA: We are in the process of identifying a Mongolian public health professional to join in field instruction, and are working to bring on Native American

professionals in Montana who have already developed climate and health adaptation plans for their tribes. We are also setting up meetings with representatives of Mongolia's Ministry of Health; the Mongolian National Emergency Management Agency; Ministry of Environment and Tourism; Information and Research Institute of Meteorology, Hydrology and Environment; and other key partners like the Ministry of Food, Agriculture and Light Industry.