

GH 418/518 / ENV H 418/518
Managing the Health Risks of Climate Change

Kristie L. Ebi, PhD, MPH
Professor, Department of Global Health
Department of Environmental and Occupational Health Sciences
krisebi@uw.edu

Jeremy Hess, M.D., MPH
Associate Professor, Department of Medicine, Department of Environmental and
Occupational Health Sciences, Department of Global Health
jjhess@uw.edu

Cory Morin, PhD
Professor, Department of Global Health,
Department of Environment and Occupational Health Sciences
cwmorin@uw.edu

Office hours will be held after class or by appointment. Offices are at 4225
Roosevelt Way NE #100. Suite 2330. Telephone number: (206) 543-6342

Teaching assistant: Chris Boyer, MPH Global Health cboyer10@uw.edu

Course times and locations: MW 2:30 – 3:50pm, CLK 219

Course website: <https://canvas.uw.edu/courses/1122464>

Center for Health and the Global Environment (CHanGE):
<http://globalchange.uw.edu/>

Credits – 3 credits

Prerequisites: None. This is a broad course open to students without specific
training in the areas of climate change, environmental sciences, and/or public
health.

Course description: Climate change is likely to be an increasing public health
challenge this century, and the public health workforce is not adequately prepared.
The current and projected human health consequences of climate change are
diverse and wide-ranging, potentially altering the burden of any health outcome
sensitive to weather or climate. In some cases the alterations may be beneficial, but
in most the net impacts are expected to be adverse. Climate variability and change
can affect morbidity and mortality from extreme weather and climate events, and
from changes in air quality arising from changing concentrations of ozone,
particulate matter, or aeroallergens. Altering weather patterns and sea level rise

also may facilitate changes in the geographic range, seasonality, and incidence of selected infectious diseases in some regions, such as malaria moving into highland areas in parts of sub-Saharan Africa. Changes in water availability and agricultural productivity could affect undernutrition, particularly in parts of Asia and Africa.

Adaptation (adjustments in response to actual or expected climatic shifts) and mitigation (efforts to reduce to the likelihood of dangerous climate change by limiting greenhouse gas emissions) are the primary policy responses to address the health risks of climate change. Health adaptation can reduce the current and projected burdens of climate-sensitive health outcomes over the short term in many countries, but the extent to which it could do so past mid-century will depend on emission and development pathways. Under high emission scenarios, climate change will be rapid and extensive, leading to fundamental shifts in the burden of climate-sensitive health outcomes that will be challenging for many countries to manage. Unmanaged disease burdens could erode gains made in public health, economic development, and living standards worldwide. Sustainable development pathways could delay but not eliminate associated health burdens.

Students in this course will gain foundational knowledge in the health effects of climate change, health benefits of mitigation activities, adaptation needs and strategies, and methods for quantifying climate change health effects and mitigation co-benefits.

Course learning objectives include to:

- Identify the major health risks of climate variability and change, including the sources of vulnerability to those risks
- Analyze the methods and tools for assessing risks for specified populations domestically and in several global health settings
- Enumerate key issues in implementing, monitoring, evaluating, learning from, and continuously updating, adaptation policies and programs
- Outline the health co-benefits of mitigation policies to reduce greenhouse gas emissions
- **Graduate student only** - Evaluate policy options to address the health risks of climate variability and change

Course Schedule:

Dr. Ebi and Dr. Hess will share teaching unless otherwise noted.

Class	Topic	Instructor	Assigned Readings
WEEK 1 Class 1 WED 1/4	Introduction and overview	Kris / Jeremy	IPCC AR5 Summary https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf IPCCAR5 Chapter 11 Human Health

WEEK 2 Class 2 MON 1/9	Political context for climate science, process for international assessments, and progress toward mitigation goals	KLE	http://www.iisd.ca/climate/cop21/ http://www.cop21.gouv.fr/en/learn/ UNFCCC Paris Agreement
WEEK 2 Class 3 WED 1/11	Exposures: weather, climate variability, climate change, and climate change epidemiology	JH	McMichael – Climate Change as Risk Factor Xun – Climate change epidemiology
WEEK 3 Class 4 MON 1/16	No class (Martin Luther King Day)		
WEEK 3 Class 5 WED 1/18	Framework for understanding and managing risks; assessing current and future vulnerability and risks	JH	Campbell-Lendrum et al 2003 Haines et al 2009 IPCC SREX Chapter 7 Ebi et al 2006 IPCC SREX SPM 2012
WEEK 4 Class 6 MON 1/23	Thermal extremes and their health impacts NO CLASS: Recorded lecture will be posted	JH	Azhar 2014 Kovats 2008
WEEK 4 Class 7 WED 1/25	Methods for assessing and projecting health risks of climate change	CM	WHO 2014 Quantitative Risk Assessment – Exec Summary, Ch. 1 & Ch. 8
WEEK 5 Class 8 MON 1/30	Student presentations on political context (2-3 teams)	JH/KLE	
WEEK 5 Class 9 WED 2/1	Extreme weather and climate events and their health impacts / Disaster risk management	JH	CRED 2015 Keim 2008 SREX SPM 2012
WEEK 6 Class 10 MON	Infectious diseases (lecture will be given by Dr. Cangelosi)	KLE	Siraj 2014

2/6			
WEEK 6 Class 11 WED 2/8	Health and risk communication	JH	Jang_CC_Frames_Twitter 2014 Maibach_CCHH_UC_2015 Six-Americas-October-2014
WEEK 7 Class 12 MON 2/13	Air quality and its health impacts	KLE	Albertine_ProjectedAllergen_2014 Liu_WildfiresHealth_2015 Sujaritpong_HealthClimateAirPollution_2014
WEEK 7 Class 13 WED 2/15	Student presentations on communication	Kris / Jeremy	
WEEK 8 Class 14 MON 2/20	No class (President's Day)		
WEEK 8 Class 15 WED 2/22	Food security	KLE	Lloyd_FoodSecurity_2011 Lobell_CropYields_2014 Lake_FoodSecurity_2012
WEEK 9 Class 16 MON 2/27	Public health adaptation to climate change	KLE	Boewn_GovernanceAdaptation_2013 Ebi_AdaptiveManagement_2011 Hess_EvidenceBasedAdaptation_2014
WEEK 9 Class 17 WED 3/1	Early warning systems	JH	TBD
WEEK 10 Class 18 MON 3/6	Mitigation and co-benefits	JH	TBD
WEEK 10 Class 19 WED 3/8	Student presentations of individual projects	Kris / Jeremy	

WEEK 11 Class 20 TUES 3/14 2:30 PM	Student presentations of individual projects	Kris / Jeremy	
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Required readings:

IPCC Summary for Policy Makers
Smith et al. 2014 (Human Health Chapter of the IPCC 5th Assessment Report)
[Luber et al. 2014 \(Human Health Chapter of the US National Assessment\)](#)
World Bank Climate Change and Poverty Report

In addition, students will be assigned to read publications from the recent literature relevant to the course content.

Grading:

Grades in the course will be based on presentations and position papers (40%) and an independent project /paper (60%). Students are expected to prepare for and participate in class discussions, demonstrate knowledge of assigned readings, and demonstrate teamwork/professionalism. Grades for each assignment will be posted online and accessible through the course website.

Presentation/Position Paper 1: Groups of two to three students (or individually) will develop a presentation and position paper (1,500 – 2,000 words excluding references) on an aspect of the national or international political context for managing the health risks of climate variability and change. Grading will be based on a clear statement of the issue(s) chosen, a description of the background and arguments to support a particular perspective, and the group assessment of the validity and robustness of the chosen issue. **The position paper and a copy of the presentation will be due January 18th at noon.** The presentation and position paper will be considered in grading and all members of a group will receive the same grade.

Presentation/Position Paper 2: Groups of two to three students (or individually) will develop a presentation and position paper (1,500 – 2,000 words excluding references) on:

An aspect of communicating the health risks of climate change and options to manage these risks within the context of a local or national case study

OR

The health co-benefits of climate change mitigation and options for pursuing mitigation by emphasizing health co-benefits within the context of a local or national case study.

Grading will be based on a clear statement of the case study chosen and why, a description of how the case study is an example of best practice or an example of where communication could improve understanding or action on managing the risks of climate change, and a discussion of specific approaches to improve communication, with an evaluation of their likely effectiveness. **The position paper and a copy of the presentation will be due February 13 at noon.** The presentation and position paper will be considered in grading and all members of a group will receive the same grade.

Final Project (undergraduate student only): Each student will develop an individual paper on some aspect of managing the health risks of climate variability and change. This can be a subject covered by the readings or some other aspect of climate change that is of particular interest. A one-paragraph summary of the topic for the individual project will be due February 1st at noon. The paper will be 5-10 double-spaced pages and contain a minimum of 5 references that are peer-reviewed, scholarly articles found in scientific journals. **The paper will be due March 8th at noon and submitted via Canvas.**

Final Project (graduate student only): Each student will develop an individual paper on some aspect of managing the health risks of climate variability and change. This can be a subject covered by the readings or some other aspect of climate change that is of particular interest. A one-paragraph summary of the topic for the individual project will be due February 1st at noon. The paper will be 10-15 double-spaced pages and contain a minimum of 10 references that are peer-reviewed, scholarly articles found in scientific journals. In addition to the added length and number of references, it is expected that this paper reflect a level of thought and analysis reflective of a graduate student. In addition, the student will give a short presentation summarizing the case study for class discussion. **The paper will be due March 8th at noon and submitted via Canvas.**

Grading Summary:

- 20%-Presentation/Position Paper 1
- 20%-Presentation/Position Paper 2
- 60%-Final Project

Access and Accommodations:

Your experience in this class is important to us. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to the professors at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924

or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Academic Integrity:

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity. The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the [SPH Academic Integrity Policy](#). Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.