International policies on emergent world problems increasingly depend on harmonizing scientific knowledge, inert sociotechnical systems, and shifting political demands. This course examines global climate change from these perspectives. During the course we will develop a detailed understanding of scientific knowledge and uncertainties on climate change; investigate the international process created to link this science with policymaking; discuss the root causes of greenhouse gas emissions and possible technological trajectories to mitigate them; assess the perspectives and investment strategies of a diverse group of corporations; investigate the link between climate change, extreme events, and human security; develop an understanding of carbon and greenhouse gas markets; and finally examine the local, domestic, and international efforts to address this long-term, global threat. Throughout the course, we will pay close attention to the broader lessons of how science-based international policy can be coordinated under uncertainty, and also discuss how concerns of geographic and intergenerational equity are informed by scientific knowledge and in turn inform the debate. Classes will include lecture, discussion, group activities and possible attendance at DC area conferences. There will be a site visit at the new National Center for Weather and Climate Prediction. In addition, this year, there is a possibility that students may be able to attend the UN Climate Conference in Warsaw. Approximately one-third of the course will be devoted to a substantive and quantitative introduction to the science of climate change.

Contact Information
Professor Nathan Hultman
Office: VMH 3137
Email: hultman@umd.edu
Tel: 301-405-3429
Office hours: Wed 1:30-2:30 or appt
Books

Required:

Recommended but optional:
Bulkeley H. and Peter Newell, Governing Climate Change. Routledge, 168 pages

Assignments

• Two 1-page critiquess of readings
• Four Policy Briefs
• Leading one discussion in a team of 2
• A Final Paper
• Note: There is no final exam

Your participation grade includes attendance and discussion in class.

Discussion leader 20%
Reading Critiques (2) 15%
Policy Briefs (4) 30%
Final Paper 25%
Participation 10%

Special Opportunity

This year, the University of Maryland has been accredited as an observer organization of the UN Framework Convention on Climate Change. This provides us the opportunity to integrate actual attendance at the UN climate conference in November 2013 into the course. One element is uncertain, though, and that is how many people the UN will allow UMD to take. We may not know until around midterm how many slots we have. As such, I suggest we move forward with a plan that allows us some flexibility depending on the different possible decisions. There is some small amount of travel support (funds) that is available through the School’s existing travel support procedures, but you would be responsible for the bulk of your travel costs. So, for now, consider whether you might be interested in attending the conference as a delegate, and we just have to keep the syllabus flexible for that later half of November.
Schedule of Lectures and Readings

Note: Readings are to be completed before the lecture on the day that they are listed

Sep 9
Introduction

In class:
• Introductions
• Course overview
• Discuss COP 19 possibility
• Review topics for discussions

Sep 16
Climate systems and instrumental records

In class:
• Assign weeks for presentations
• Climate & climate change
• Radiation, energy balance, carbon cycle

Pielke Preface + Ch 1: “Dinner table climate science for commonsense climate policy”
Dessler Ch 1-5
Hulme Ch 1: “The social meanings of climate”

Sep 23
Impacts, Detection & Attribution, Extremes

In class:
• Models and future of climate
• Forcing, feedbacks, climate sensitivity
• Physical impacts
• Detection and attribution
• Variability and extremes
• Due: Policy Brief 1: Extreme Events in the US or country of your choice

Dessler 6-7
IPCC Special Report on Extremes (SREX): Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation:
• I also encourage you to read any other chapter(s) that are of interest to you

Kunkel et al. (2012). “Monitoring and Understanding Trends in Extreme Storms: State of

Sep 30
Models: Center for Weather and Climate Prediction + Integrated Assessment Modeling

In class:
- Site visit to National Weather and Climate Prediction Center at UMD research Park (TBC)
- Rest of class to be held at Joint Global Change Research Institute across the street with guest lecture (TBC)
- Scenario modeling of climate futures

Dessler Ch 8-10
[scenario article tbd]

Oct 01
Tuesday Policy Forum

*Note, on a Tuesday
School of Public Policy: Policy Forum
Offshore Wind in Maryland

Oct 07
“Climate Science” – Is it science? Is it politics? + Values in the debate

In class:
- Climate science controversies
- Process of science; uncertainty; consensus
- Assessing risk and danger
- Role of religion, science, media
- Values, ethics and equity considerations
- Due: Reading critique 1 of Hulme Ch 3

Dessler Ch 13, “A brief history of climate science”
Hulme Ch 3, 5-7
Pielke Ch 7-8: “Disasters, death, and destruction” and “The politicization of climate science”
Hulme and Ravetz, "Show your working" BBC December 2009,  
http://news.bbc.co.uk/2/hi/8388485.stm  
Berkeley Earth Surface Temperature (BEST) Project Summary  
http://berkeleyearth.org/results  
BBC “Global warming 'confirmed' by independent study” 20 October 2011.  
BBC “Climate study raises 'heated debate'” 21 October 2011  
Ward, B. “Physicist Muller’s Big-Time Conversion: Was It News ... or Just Slick P.R.” Yale 360 forum 16 August 2012.  
http://www.yaleclimatemediaforum.org/2012/08/physicist-mullers-big-time-conversion-was-it-news-or-just-slick-p-r/  

Oct 14
US climate policy

In class:
- Finish Climate science
- Policy options
- US Congress and climate legislation
- US Social cost of carbon exercise
- Back door climate policy / Carbon tax and the grand bargain
- Electoral politics of climate

Dessler 11-12  
H&H “Part IV: National and International Instruments“:
- Ch 18: Hepburn, “Carbon taxes, emissions trading, and hybrid schemes”
- Ch 19: Wagner et al, “Docking into a global carbon market”
- Ch 20: Hepburn, “International carbon finance and the CDM”

H&H Ch 10 Stavins, “Addressing climate change with a comprehensive US Cap-and-trade system”

http://www.brookings.edu/~media/research/files/papers/2012/3/02%20climate%20policy%20gayer/0302_climate_policy_gayer.pdf  
http://reep.oxfordjournals.org/content/5/2/293.full.pdf+html  
Obama Policy http://www.whitehouse.gov/agenda/energy_and_environment/  
Pew Center on Global Climate Change:  
http://pewclimate.org/what_s_being_done/in_the_congress  
World Resources Institute:  
http://www.wri.org/publication/usclimatetargets  
Valuing Climate Risk, Impacts, and Cost under Uncertainty

In class:
• Group presentation: Elena, Namrata, Cara
• Economics of climate change
• The origins of value
• Expert assessment of risk
• Assessing economic impacts
• Asymmetries in uncertainty, geography, time
• Due: Policy Brief 2: US Social Cost of Carbon

Hulme Ch 4: “The endowment of value”

H&H Ch 6, Brekke and Johansson-Stenman “The behavioural economics of climate change.”


http://reep.oxfordjournals.org/content/5/2/275.full.pdf+html

http://reep.oxfordjournals.org/content/5/2/240.full.pdf+html


Optional but recommended for further reading:


Oct 28
International Climate Policy

In class:
• Policy options
• Evolution of the international climate change agreements
  o UNFCCC & Kyoto; Copenhagen/Cancun
  o G8 + 5; Asia-Pacific partnership
• Policy in US, EU, China, India

Pielke Ch 2: “What we know for sure, but just ain't so”
Pielke Ch 3, “Decarbonization of the global economy”
Pielke Ch 6: “How climate policy went off course and the first steps back in the right direction”
H&H Part I: Revisiting the Economics of Climate Change.
  • Ch. 2: Helm, “CC Policy: Why has so little been achieved?”
  • Ch. 3 Hepburn and Stern: “The Global Deal on Climate Change”
  • Ch. 4 Barrett “Climate treaties and the imperative of enforcement”
  • Ch. 5 Garnaut et al, “The implications of rapid development for emissions and CC mitigation”

UN Climate Change agreements

Nov 04
National and sub-national policies

In class:
• Group presentation: Sha, Qing Tan
• EU policy
• China, India, Brazil, S Africa
• Carbon markets
  o EU ETS
  o Clean Development Mechanism
  o Voluntary markets
  o RGGI
  o California & Western States
• Carbon trading, accounting, and finance
• Carbon tax

Pielke Ch 4, ”Decarbonization policies around the world”
Be familiar with:
  Australia’s on-off carbon tax
  Voluntary Carbon Standard http://www.v-c-s.org/
  Chicago Climate Exchange http://www.chicagoclimatex.com/
  RGGI http://www.rggi.org/home
  Western Climate Initiative http://www.westernclimateinitiative.org/
Nov 11-22 COP-19 Warsaw
Course integration with UN Climate Conference

Nov 11
Climate policy in different development contexts

In class:
- Group presentation: Joanna, Liz, Amali
- Adaptation motivation
- Adaptation theory
- Vulnerability and poverty
- Estimates of adaptation needs
- Understanding vulnerability and resilience
- International institutions and adaptation finance
- **Due: Policy Brief 3: International climate policy**

Hulme Ch 8: “The challenges of development”
H&H “Part II: Global players and agreements”:
- Ch 7: Collier et al “Climate change and Africa”
- Ch 8: Pan et al “China’s balance of emissions embodied in trade”
- Ch. 9: Joshi and Patel “India and climate change mitigation”

Nov 18
COP19 Updates

In class:
- **Prof Hultman and week 2 participants will be at COP**
- **Week 1 participants** will brief class on their experiences and field questions
- We will conduct a joint class with the COP attendees and those at UMD from 1:30-2:30 pm
- *Plans will be updated*

Nov 25
Low-carbon technologies

In class:
- Group presentation: Amanda, Matthew, Qing Shi
- Technology options
- Fostering technological innovation and diffusion
- Geoengineering
- **Due: Policy Brief 4: UNFCCC/ COP-19 Outcomes**

Pielke Ch 5, “Technological fixes and backstops”
H&H Part III: Low-carbon technologies (Selected chapters)
- Ch 12, Helm, “Nuclear power, climate change, and energy policy”
- Ch. 13, Herzog, “Carbon dioxide capture and storage”
• Ch. 15, Andersson, Plantinga, and Richards, “The national inventory approach for international forest carbon sequestration management.”
• Ch 16, Victor, “On the regulation of geoengineering”


H&H “Part V: Institutional Architecture”:
• Ch 21: Depledge and Yahmin, “The global climate change regime: A defence”
• Ch 22: Ghosh and Woods, “Governing climate change: Lessons from other governance regimes”

Dec 02

**Climate Science Catch-Up**

Dec 09

**A New Model for Climate Policy?**

In Class
• Looking to Rio and post-2012 international agreements
• **Due Dec 12: Final Paper**

Pielke Ch 9: “Obliquity, Innovation, and a pragmatic future for climate policy”
Either Hulme Ch 10: “Beyond climate change” OR Dessler Ch 14