

Innovative Teaching Approaches for “Wicked Problems”: Climate Change and other Challenges



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NNF Fellows



Annah Latane (MS student) – conducted the ground work for initiating a new class and lead the effort to begin to outline an undergraduate class that integrates economics and climate change. Completed her masters thesis June 2014 titled Exploration of Water Quality in the United States using an Environmental Kuznets Curve Framework, which incorporated climate change as one factor that can impact water quality and water quality regulations.



Cassie Finer (PhD student) – worked as a TA with the introductory course to gain teaching experience with integrating climate change topics into economic theory and applications, and will help to develop the upper level Climate Change and Economic Policy course. Her NNF research focuses on valuing the effects of climate change and climate risk on land markets.



Sara Wynn (MS student) – New to the fellows program this spring. Her background is in environmental management and Chinese language has shaped her interest in international development. Her current research is focused on Climate Smart Agriculture technology adoption and outcomes for small farmers in Tanzania.

Graduate Education in the Economics of Mitigating and Adapting to Climate Change: Evaluating Tradeoffs, Resiliency and Uncertainty using an Interdisciplinary Platform



Objective: To recruit and train 2 M.S. Fellows and 2 Ph.D. Fellows in the National Targeted Expertise Shortage Area (TESA) of Agricultural Management and Economics (specifically Trade and Resource Economics),

- OSU's AEC graduate program provides a direct connection to the Forest Resources TESA provided by its integration of faculty in our College of Forestry.
- This multi-resource approach enables us to develop expertise in policy analysis in ecosystem processes and services related to forestry, fisheries, water, and other resources and strongly supports the NNF theme, climate change, resilience, sustainable resource use and trade.
- It connects the two TESAs to a crosscutting topic related to four of our areas of special expertise: markets and trade, economics of resource use and management, bio-energy and alternative fuels, and rural development.

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AEC NNF Commitments:

- Interdisciplinary focus on the economic dimensions of climate change, resource management and resilience, rural development, bio-fuels, or trade specialization.
- Unique opportunities to work on trans-disciplinary teams composed of agricultural and resource economists, biological and environmental engineers, and other leading experts at OSU and CGIAR centers in economic impact assessment, climate modeling, crop and livestock modeling, and environmental modeling, providing an understanding of the importance of economic tradeoffs in effective policy design and an appreciation for the complexity of addressing human dimensions of changing resource systems.
- Develop skills needed to become productive contributors to National Targeted Expertise Shortage Area (TESA) and enter the pipeline to successful careers in agricultural and resource fields.
- Encourage students to attend professional meetings to participate, present and disseminate results from their research.
- Through AEC's connectivity to the Earth System Science division, AEC graduates, within an interdisciplinary platform, will address grand challenges in the climate and resource arenas: trade and energy, agricultural sustainability, forestry management, bio-energy policy, climate change, and ecosystem management, in developed and developing countries.

The Wicked Problem of Climate Change



The most challenging global issue
we will ever need to address

Highly Political



Information Uncertainty



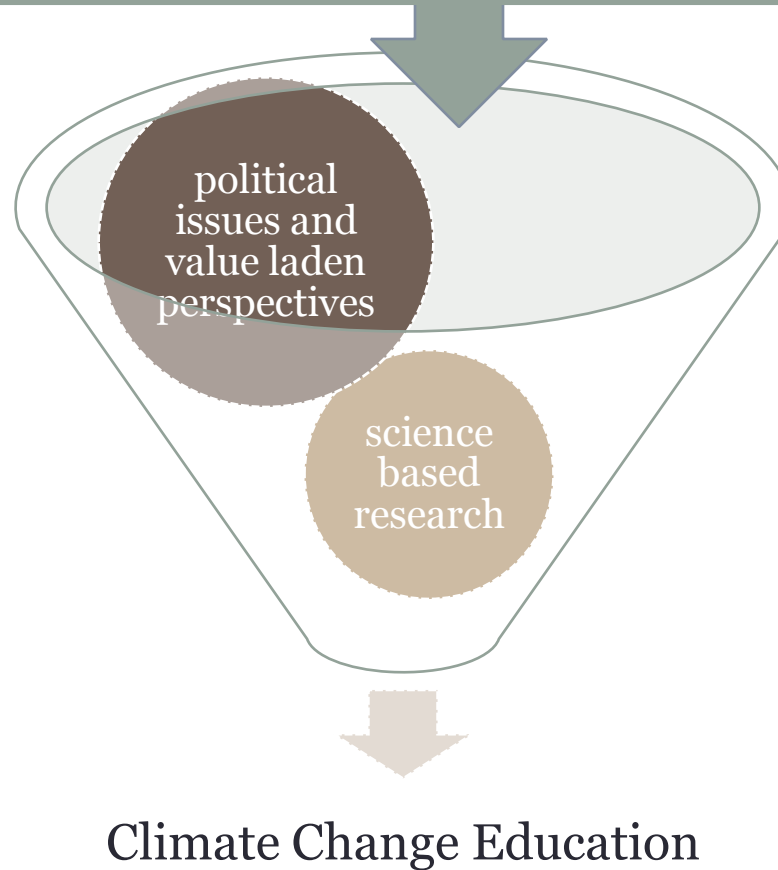
Generational Equity Issues



Innovative Teaching Methods and Practices

- Graduate Students
- Researchers
- Instructors

Objective: to better understand learning styles and design innovative teaching methods/practices



Economics of Mitigating and Adapting to Climate Change Program

Sorting through
approaches for
such a platform
has been the thrust
of our program



Translating Research and Risk



There is a growing need for scientists to convey importance of research findings and effectively communicate about complexity, uncertainty and risk with the general public and with students. How can we best provide the training to do so?

Climate Awareness



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everydayclimatechange Photo by Jeremy Sutton-Hibbert @JshPhotog - Running to a cleaner future on the tracks of Cathkin Braes, Glasgow, Scotland. Last month wind energy in Scotland provided 36% of Scotland's entire electricity needs, according to new figures from @WWF Scotland. Wind and tidal wave energy is surging in Scotland, helping the nation to reduce climate-wrecking emissions. Last month Scotland saw wind generate 58% more electricity than in the same month last year, enough to meet the needs of 72% of Scottish homes. WWF Scotland director Lang Banks said: "It may have been amongst one of the wettest and windiest months in decades, but July also turned out to be a belter of a month for wind power in Scotland. Thanks to a combination of increased capacity and much windier weather,

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Climate Awareness



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everydayclimatechange Photo by @ashleycrowtherorg for @everydayclimatechange : Not too long ago I posted an image of a small village in the #Indian #Himalaya in the Spiti Valley called Demule, which sits at an altitude of 4600m above sea level. I shone light on the great community-based environmental and social initiatives occurring in the region from independent energy and heating systems. Here is a closer image of the #Tibetan style block and flat roof homes. As we can see they are installing solar panels and solar passive infrastructure into home design (the greenhouse style plastic). It is a bit of tradition meeting modern technological advances. This small-scale initiative has enabled remote villages, like Demule, access to much-needed electricity and heating. E.F Schumacher in his book "Small is

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Media Coverage

<http://mediamatters.org/research/2015/01/28/study-how-broadcast-networks-covered-climate-ch/202232>



STUDY: How Broadcast Networks Covered Climate Change In 2014

Research January 28, 2015 9:38 AM EST >>> KEVIN KALHOEFER

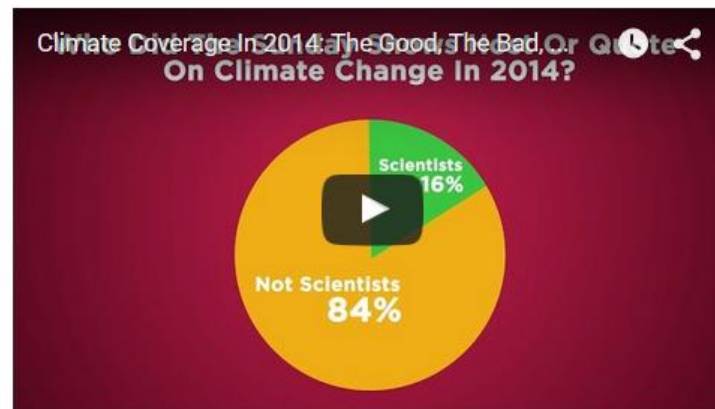
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552

The total coverage of climate change on ABC, CBS, NBC, and Fox continued to increase for the third consecutive year, according to a Media Matters analysis, yet still remained below the level seen in 2009. Coverage on the networks' Sunday shows reached a six-year high after a group of senators demanded they provide more coverage of the issue, but the Sunday shows still infrequently interviewed scientists.



Networks' Total Climate Coverage Increased In 2014

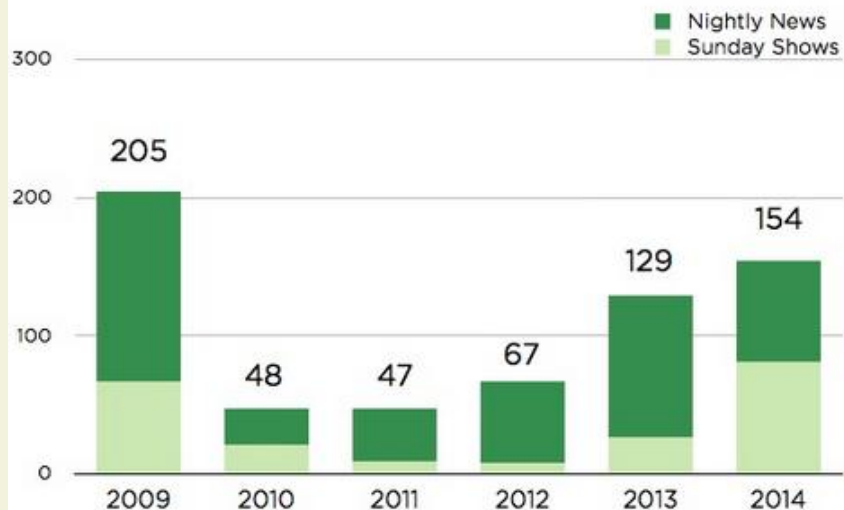
Broadcast Networks Provided The Most Climate Coverage In Five Years. During 2014, the major broadcast networks' evening and Sunday news programs aired a total of 154 minutes of coverage of climate change. This was an increase from the previous year's 129 minutes and was significantly above the six-year average of about 108 minutes, but remained below the 205 minutes of coverage in 2009.

Media Coverage

<http://mediamatters.org/research/2015/01/28/study-how-broadcast-networks-covered-climate-ch/202232>

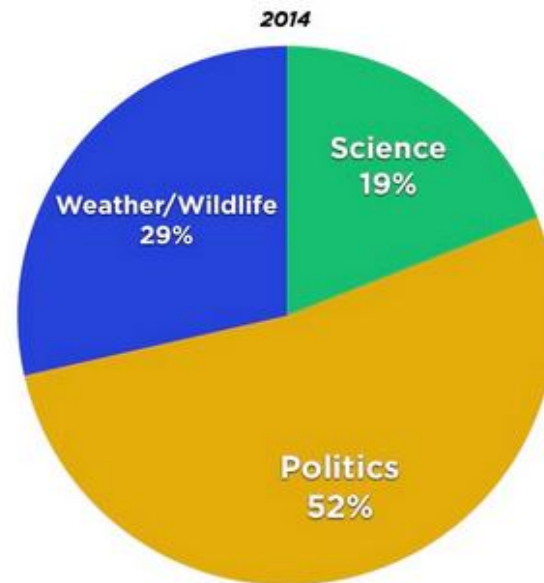
Broadcast News Coverage Of Climate Change

Minutes of airtime on ABC, NBC, CBS, and FOX*



MEDIAMATTERS *FOX does not have a nightly news program

What Topics Drove Climate Change Coverage On Sunday Shows?



MEDIAMATTERS

Principles for successfully dealing with wicked problems (collaborative learning)



- Our learning collaborative process for addressing wicked problems and policy recommendations is common to both pathways and includes the following principles:
- Start out with finding common ground among diverse audiences – what does everyone want?
 - – For Climate change: sustainable quality of life for everyone
 - – For Forest management: healthy forests, viable rural economies
- Problem-framing drives priority questions, results in better dialogue about how to get there?
- Questions linked to future decisions and policy outcomes drive monitoring.
- Innovative solutions may need to be catalyzed and facilitated through collaborative dialogues.
- Hypotheses tested in science-based designs produce fuel to drive changes.
- Thoughtful evaluation of outcomes and new feedback channels drive management change.

Challenges Facing Agriculture in the 20th Century:



- 25% of Earth's lands are already degraded.
- More than $\frac{3}{4}$ of the 70% increase in global food production needed by 2050 will have to come from the “sustainable intensification” of existing agricultural lands
- This is a global issue, requiring responses both nationally and internationally.

Media Coverage



http://www.nytimes.com/2015/02/17/science/earth/in-climate-change-whats-in-a-name.html?_r=0 **Verbal Warming: Labels in the Climate Debate**
FEB. 12, 2015