Interdisciplinary Approaches to Climate Change Research and Training

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Interdisciplinary Approaches to Climate Change Research and Training

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On behalf of the Interdisciplinary Humanities Group for the Study of Climate Change

Why is climate change important?

Temperature difference relative to 1950-1980"
Climate change has likely contributed to recent extensive flooding in the U.S.

And recent drought

2011

2012
In the future, most summers are likely to be hotter than any experienced thus far.

For many Midwestern cities, dramatic increases are predicted in the number of Chicago 1995-like heat waves - responsible for ~ 700 deaths in 1995.

Before 1990: 0.01 per year
Today: 0.13 per year
2070-2100: 2.74 per year
Much of the world is likely to experience much more frequent and stronger droughts by the 2060s.

Developed countries are causing the problem, but developing countries experience most health costs.

Countries proportional to CO₂ emissions (1950-2000)

Countries proportional to climate-sensitive health effects
Why is climate change best approached from an interdisciplinary perspective?

Natural scientists have established, beyond a reasonable doubt, that humans are the primary cause of current climate change …

… but most Americans are not yet convinced.

The impediments to effective climate change action are no longer scientific; they are now sociological, political, and economic.

Therefore, only a truly interdisciplinary approach can identify all of the obstacles, and all of the solutions, to this complex problem.
How might an interdisciplinary approach be funded?

One possibility: NSF REU (Research Experiences for Undergraduates) program

- 10 students per summer for 3-5 years
- top students from across the country spend 8-10 weeks at WMU, receiving interdisciplinary training
- each student conducts a research project under the guidance of a primary mentor (possibly with two other faculty as committee members)
- students receive ~$5,000 stipend

Research projects could address scientific, sociological, political, economic, ethical, and other aspects of climate change

What is the effect of climate-induced increases in severe rainfall events for mobilization of PCBs from Kalamazoo River sediments, and are the health consequences likely to be spread equally across economic strata?

What has allowed Europe to enact climate change legislation while the U.S. has not?

What parts of climate science are well understood by the general public, and why are other parts poorly understood?
REU students would also participate in a series of workshops that provide an interdisciplinary perspective

Science of climate change
Politics of climate change
Sociology of climate change
Economics of climate change
Ethics of climate change