

ENVR E-130 / DHPP-347

# Global Climate Change: The Science, Social Impact and Diplomacy of a World Environmental Crisis

<http://courses.dce.harvard.edu/~envre130>

## Monitoring & Modeling: The Ongoing Evidence

Dr. George E. Clark, Harvard University  
and Miriam Seltzer, Tufts University

Professors William Moomaw and Timothy C. Weiskel

Harvard University Extension School

Spring Semester - Session 5

1 March 2005



# “House Keeping”

- *All students expecting to receive a grade in this course must fill out the “Student Information Form” under Week 1*
- *This is IMPORTANT because filling out this form gives you an entry in the course “Gradebook.” Without that entry, we cannot keep track of your grades and will not be able to give you a final grade in the course.*
- *This applies to both local and “distance” learners.*



# George E. Clark

- George Clark is the **Environmental Resources Librarian** in the Harvard College Library. He has degrees in geology and geography, with research experience in water resources, natural hazards, and human vulnerability to environmental problems.
- He came to Harvard from the United States Environmental Protection Agency, where he was the Agency's social scientist for the Chicago regional office.



# Miriam Seltzer

- Miriam Seltzer has been a reference librarian for the last 25 years.
- She has worked at the **Boston Public Library** in both Humanities and Government Documents departments; at the **University of Victoria** in British Columbia, Canada, and at the **Boston Globe Library**.
- She has been at the **Edwin Ginn Library** at the Fletcher School of Law and Diplomacy for the last 12 years.



***‘What in the World  
is Happening?’***



**And How Can We Find Out?**

ENVR E-130

# News, Spin and Pop-Culture...

In this course you should learn to...

- **Investigate** the news ... thoroughly – to trace down and study the *primary sources*.
- **Penetrate** the “spin” to discern the real issues in debate.  
and
- **Counter** the mythology of “pop-culture” as it is being actively constructed all around you.
- In order **to arrive at understandings** based on **new knowledge**, not simple re-affirmations of “pre-analytical” *belief*.

Beyond the basic physics that drives the biogeochemical changes associated with climate change, there is no specific set of eternal truths about the climate that you must learn in this course -- except that...

it is *always* changing.....in many ways we are just beginning to learn about.

Moreover, collective human activity has changed the composition of the atmosphere. Furthermore, this may well be having an impact on the pace and scope changes in climate that we are now witnessing and will experience in the future.

# Our Goal is for You to

Become perpetually curious – but *not*  
*confused.*

*“Learn to learn,  
And try to learn what for....”*

Berthold Brecht

# Let's "Read" a News Story...

## New diseases arise as environments destroyed, says UN

**By Michael McCarthy, Environment Editor**

22 February 2005

Changes to the environment that are sweeping the planet are bringing about a rise in infectious diseases, the United Nations Environment Programme (Unep) has warned.


Loss of forests; the building of roads and dams; urban growth; the clearing of natural habitats for agriculture; mining; and pollution of coastal waters are promoting conditions under which new and old pathogens can thrive, according to research published today in Unep's *Global Environment Outlook Year Book* for 2004/2005.

Ailments previously unknown in human beings are appearing, such as the Nipah virus, which until recently was found normally in Asian fruit bats, according to the report.


Nipah's emergence in the late 1990s as an often fatal disease in humans has been linked to a combination of forest fires in Sumatra and the clearance of natural forests in Malaysia for palm plantations. In searching for fruit, bats were forced into closer contact with domestic pigs, giving the virus its chance to spread to humans.

# Press Release

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United Nations Environment Programme  
environment for development

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## UNEP Launches 2004/5 GEO Yearbook

UNEP's Governing Council 21 to 25 February

**Nairobi, 21 February 2005** - Scientists are linking a rise in new and previously suppressed infectious diseases with the dramatic environmental changes now sweeping the planet.

Loss of forests, road and dam building, the spread of cities, the clearing of natural habitats for agriculture, mining and the pollution of coastal waters are promoting conditions under which new and old pathogens can thrive.

Experts cite the case of the highly pathogenic Nipah virus which until recently was found normally in Asian fruit bats.

Its emergence in the late 1990s as an often-fatal disease in humans is being linked with a combination of forest fires in Sumatra and the clearance of natural forests in Malaysia for palm plantations.

Bats, searching for fruit, were forced into closer contact to domestic pigs giving the virus its chance to spread to humans via people handling swine.

Climate change may aggravate the threats of infectious diseases in three ways, experts suggest.

G E O  
Y E A R  
B O O K

### Further Resources

- [Global Environment Outlook Year Book 2004/5](#)
- [Centre for Disease Control and Prevention](#)
- [WHO-UNEP Health Environment Linkages Initiative \(HELI\)](#)
- [UNEP Governing Council 23rd Session](#)
- [UNEP & the MDGs](#)
- [UNEP Resources on Climate Change](#)
- [World Health Organization](#)

# Official Report

G E 

Y E A R

B O O K

An Overview of  
Our Changing Environment

2004/5



UNEP United Nations Environment Programme

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## Climate Change Headlines

### Course Description:

This introductory course will give students an integrated overview of the science of climate change and an analysis of the implications of this change for patterns of daily life in their own circumstance and around the world. Humankind is facing an unprecedented environmental crisis of global proportions. Scientists from across the world have issued stark warnings about the potential disruption and destabilization that changes in Earth's climate will most likely cause in the near future for the life systems upon which modern civilization depends. The social and political implications of climate change have begun to become apparent as local communities in widely different parts of the world struggle to adapt to new patterns of excessive

[Climate Change Petition Online...](#)  
Ad - [www.actionnetwork.org](http://www.actionnetwork.org)  
Mon Feb 28 05:59:00 EST 2005

[Substantial tsunami damage to Seychelles reefs ...](#)  
[afrol News](#) Mon Feb 28 05:59:00 EST 2005

[US-European Compact to Face Common Challenges ...](#)  
[Islam Online](#) Mon Feb 28 05:56:00 EST 2005

[Report praises Global species database initiative as essential](#)

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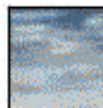


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Published February 28, 2005

## EPIIC Symposium 2005 | Panelists discuss the ways that climate change can and will affect foreign policy

by Mark Pesavento  
Daily Editorial Board

Panelists at the Education for Public Inquiry and International Citizenship (EPIIC) Symposium, "Adapting to Climate Change," offered attendees several unique perspectives on mitigating and adapting to a world amidst a rapidly changing climate.

The event, which took place Sunday afternoon in Cabot Auditorium, entailed taking a closer look at such issues as global warming and the Kyoto Protocol.

The Protocol is one of many steps the United Nations Framework Convention on Climate Change (UNFCCC) has taken toward reducing carbon dioxide emission rates. An increase in carbon dioxide over the years has been linked to an increase in global warming - the phenomenon associated with rising temperatures and sea-levels across the globe.

Gwin Prins, a research professor at both the London School of Economics and Columbia

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## News



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Published February 28, 2005

# CLIMB urges immediate action against climate change

by Patrick Gordon  
Daily Editorial Board

According to a recent joint study conducted by Tufts and Boston University (BU) researchers, it is only a matter of time before unhealthy impacts of climate change on Boston's infrastructure become apparent.

Dr. Paul Kirshen, Tufts research professor in the departments of civil and environmental engineering, served as the Project Manager, and said that researchers worked for five years to complete the study.

"From 1999-2004 we looked at how climate changes will affect infrastructure," Kirshen said. "We looked mostly at the effects on service, public health and energy."

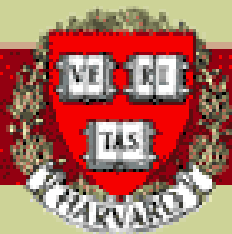
The conclusions were published in a report entitled "Climate's Long-term Impacts on Metro Boston (CLIMB)," he said, and were presented to the Environmental Protection Agency (EPA) in October.

**TUFTS WEATHER**

Current Weather Conditions for Medford



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Harvard and

## Gore, Summers, McElroy to speak on climate change

*Issue will be discussed from vantages of politics, economics, and science*

Last month, a scientific report commissioned by the eight Arctic nations, including the United States, concluded that the Arctic is experiencing some of the most rapid and severe climate change on Earth. Changes in arctic climate will cause sea levels to rise and drive many species toward extinction, including polar bears. "You have organisms that have been pushed beyond their limits," says James McCarthy, Alexander Agassiz Professor of Biological Oceanography and an author of the study.

But what can be done about climate change? Although there is scientific consensus that climate change is happening and is caused by human activities, it is difficult to predict exactly what the future impacts will be, and there is intense debate on what steps to take to reduce greenhouse gas emissions. Former U.S. Vice President Al Gore, Harvard President Lawrence H. Summers, and Gilbert Butler Professor of Environmental Studies Michael B. McElroy will address the question of what to do about climate change from their different perspectives of politics, economics, and science. The event, "Climate Change: The Way Forward," will be held at 4 p.m. Monday (Dec. 13) at Sanders Theatre and is sponsored by the Harvard University Center for the Environment.

USA > Society & Culture  
from the March 01, 2005 edition



**CENTER OF ATTENTION:** Harvard University President Lawrence Summers (right) was surrounded by members of the media as he walked to a faculty meeting last week. Students (left) protested with signs and chants outside the meeting.  
PHOTOS BY STEVEN SENNE/AP

# In media age, role of college president evolves

## Amid Uproar, Harvard's President Ponders His Style



Jodi Hilton for The New York Times

Dr. Lawrence H. Summers in his office at Harvard Friday. "The days have been long," he said, "and the weeks have been long, too."





By PATRICK D. HEALY and SARA RIMER

Published: February 26, 2005

**C**AMBRIDGE, Mass., Feb. 25 - Former President Bill Clinton recently advised him to learn from his mistakes and move forward. The political counselor David Gergen has helped on damage control. Surrounded by the best minds of Harvard, he has turned for guidance to the public intellectual Henry Louis Gates Jr., the empirical social psychologist Mahzarin Banaji and the campus wise man Henry Rosovsky, among others.

He is reading tomes about leadership. He also recently took his children to see "Hitch," a new movie, as it happens, about men who are trying to improve their social skills.

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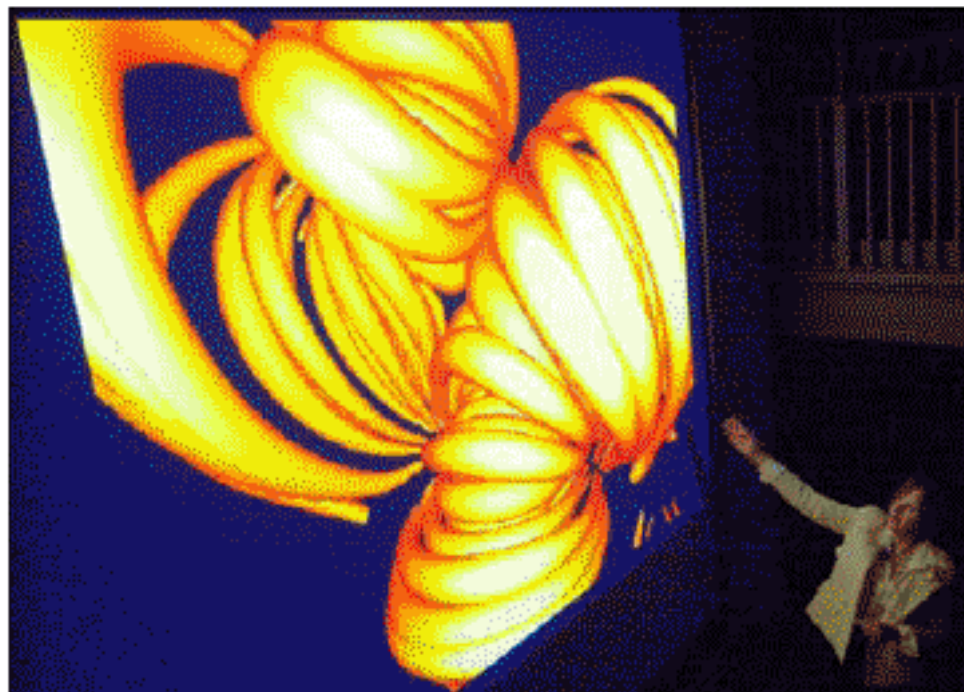
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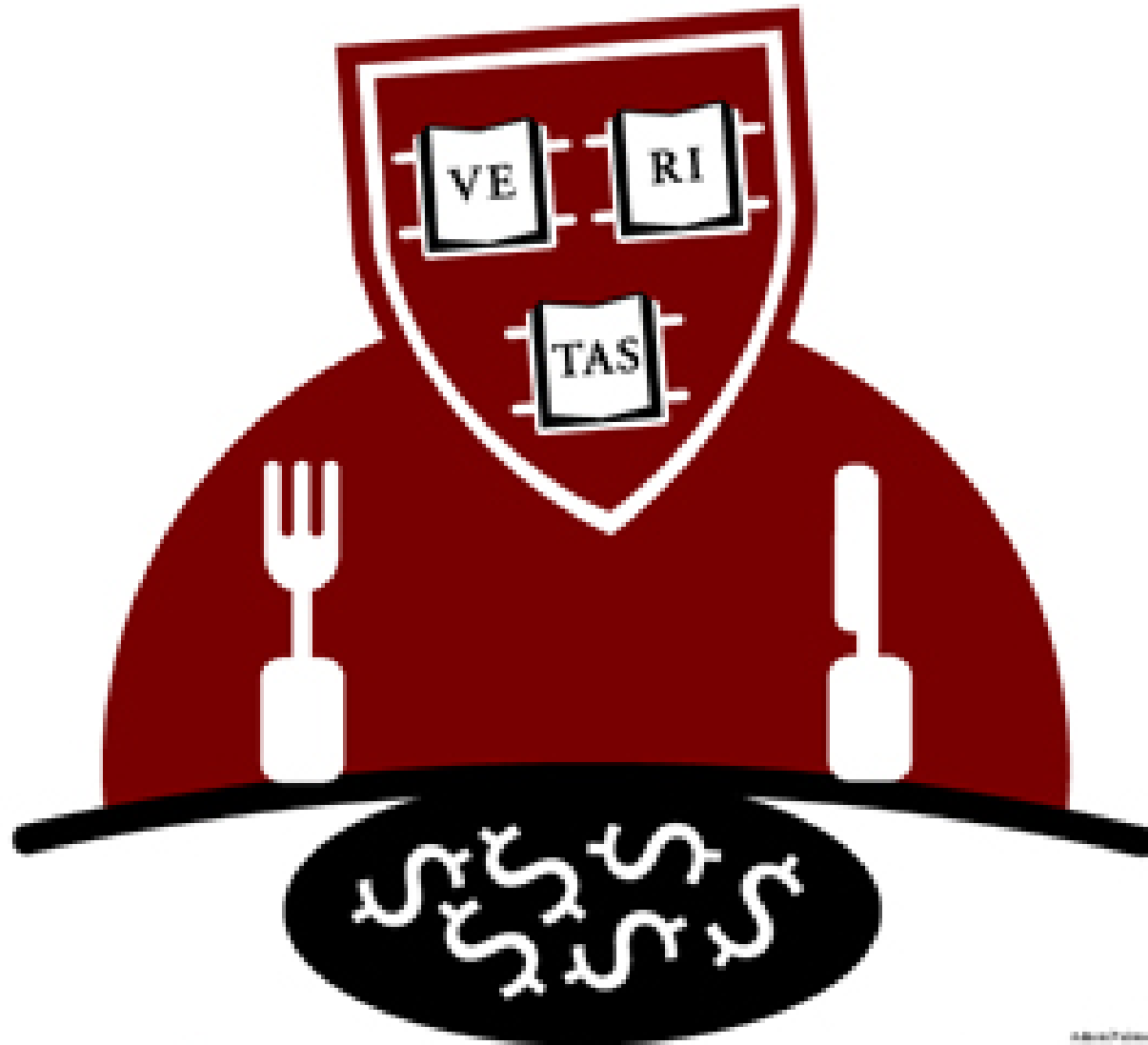
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highlights,  
upcoming games



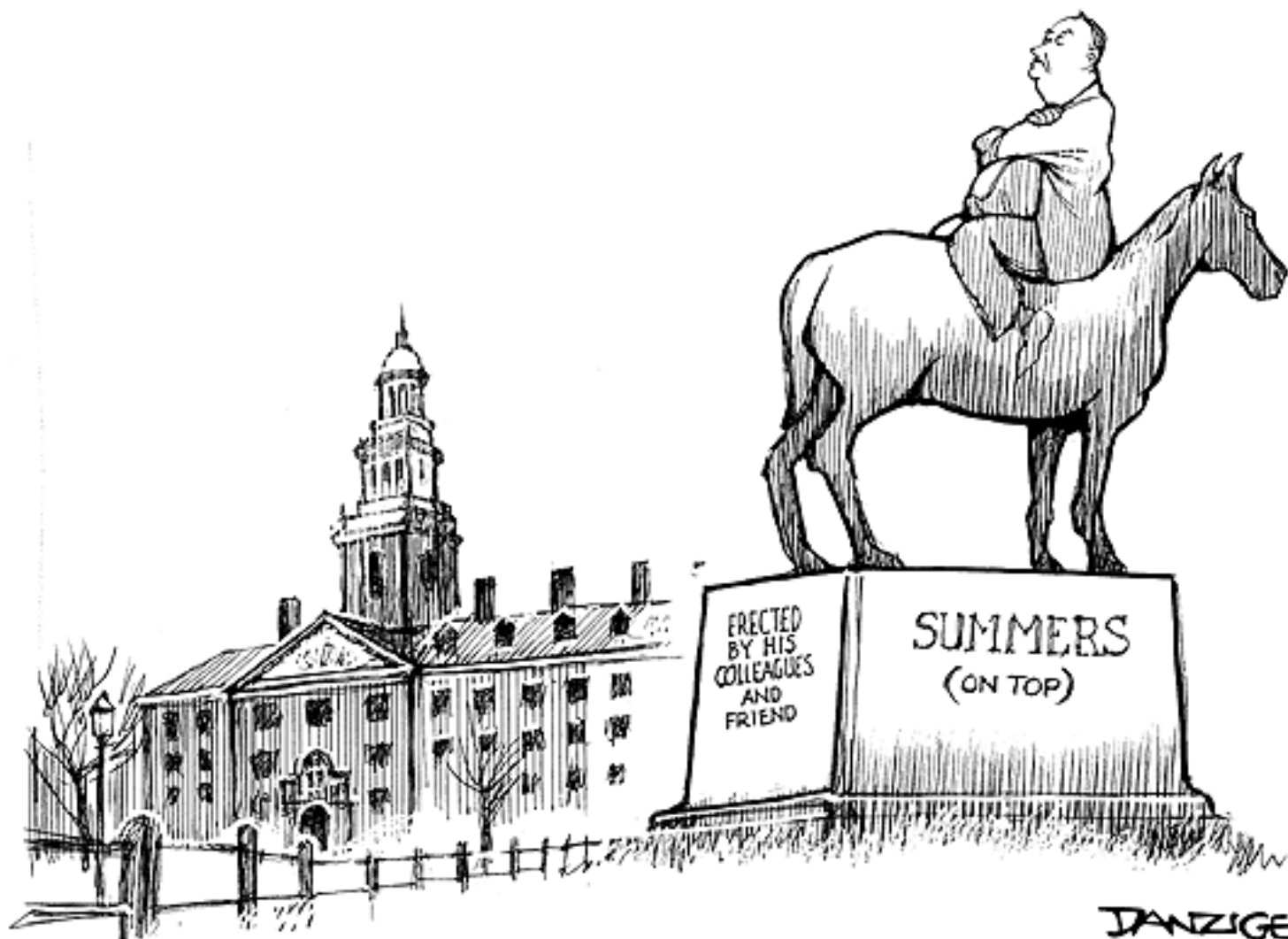
Looking like exotic space flowers, these vivid images reveal vagaries in a star's output of heat. The images help astronomers determine how natural changes in the sun's energy output influence global warming on Earth. (Staff photo by Jon Chase)

**Global warming is not so hot:**



The Battle Behind the Battle at Harvard

The President of Harvard Will be Honored by a Special Statue



DANZIGER

NYTS/CWS Feb 17 2005 (2302)

# The Great Global Experiment



As climate change  
accelerates, how  
will we adapt to a  
changed earth?

by JONATHAN SHAW

For information, contact: [info@climatechange.org](mailto:info@climatechange.org)

# Beyond News - The Problem of 'Spin'

## Bush vs the Scientists

What really happened in March 2001?  
What was the role of "science" in the U.S.  
decision?

*Climate Change Science, June 2001*

# What Happens When Pop-Culture is Confused With Serious Simulation studies?

## The Sky is Falling! Say Hollywood and, Yes, the Pentagon

By ANDREW C. REVKIN

**A**FTER nearly two decades in which global warming seemed about as exciting as the national debt, the subject is getting noticed again — even by Hollywood and the Pentagon.

Since the late 1990s, there has been growing interest in one particularly catastrophic climate event. It envisions an abrupt fall in global temperatures, caused by incremental warming from rising emissions of heat-trapping gases. What better fodder for movie makers or military strategists?

In the coming movie "The Day After Tomorrow," directed by Roland Emmerich, who last threatened Earth with alien warships in "Independence Day," "vape storms" destroy Western Europe, and Manhattan is covered in a sheet of ice.

"An Abrupt Climate Change Scenario and Its Implications for United States National Security," on the other hand, was written recently by two consultants for Andrew W. Marshall, the Pentagon's legendary guru of long-term threat assessment.

Mr. Marshall said he commissioned the undated study after reading a 2001 report from the National Academies of Science, the country's top scientific advisory group, which pointed to risks of future climate shocks.

The report suggests that slow warming of the planet, caused by melting ice that floods the North Atlantic with fresh water, could disrupt the ocean currents that keep Europe and easternmost North America far warmer than they would otherwise be.

Scientists say this actually occurred twice, 11,500 and 6,200 years ago, after the last ice age, when, within a decade or two,

Global warming is back and disaster looms, sort of.

temperatures plunged after melting ice sheets led fresh water into the Atlantic.

Right now, the thinking goes, there is an awful lot of Arctic and glacial ice melting, and that, along with shifts in precipitation patterns, is once again raising freshwater levels in parts of the Atlantic.

The Pentagon study (available at [www.ems.org/climate/pentagon-climate-change.pdf](http://www.ems.org/climate/pentagon-climate-change.pdf)) is not as dramatic as Mr. Emmerich's film, but it was alarming enough that a British newspaper, *The Observer*, proclaimed, "The Pentagon tells Bush, climate change will destroy us. Secret report warns of rioting and nuclear war."

Most experts caution that the data on past changes and current trends are spotty and that computer simulations a pale shadow of the real world. Still, some environmental groups and scientists have suggested the Pentagon study could prompt nations to curb smokestack and car emissions.

But many climatologists and other experts doubt this. Some argue that focusing on worst-case, least-certain events could lead people to play down the better understood risks posed by steady global warming. This skepticism may be especially true within the Bush administration, whose stated view (the Pentagon study notwithstanding) is that the entire matter of global warming requires more study, not action.



The environment strikes back in a new movie, "The Day After Tomorrow."

Peter Schwartz, one of the consultants who conducted the study for Mr. Marshall under a \$100,000 grant, said his analysis was intentionally extreme and aimed at forcing military strategists to "imagine the unthinkable." Most scientists, he and his co-author, Douglas Randall, consulted said it was extreme, both in its premise and its global geopolitical reach.

"The Day After Tomorrow," on the other hand, goes beyond the extreme, depicting global warming as a force that will rapidly overwhelm modern civilization. Mr. Emmerich said during filming last year that he

wanted to wake people up to the perils of greenhouse gases.

"It's a popcorn movie that's actually a little subversive," he said.

But just as a movie's impact usually ends when the credits roll, so too could the impact of the Pentagon study. Indeed, Pentagon spokesmen said it had not been passed on to Mr. Marshall's superiors in the Defense Department or the Bush administration.

All of this makes some environmental researchers exceedingly frustrated. The science remains murky, they say, while the public and the politicians increasingly want

hard predictions. This makes it nearly impossible to discuss the issue in ways that are both accurate and productive.

Dr. Stefan Rahmstorf, a scientist at the Potsdam Institute for Climate Impact Research, pointed to the outcome of a recent news conference he held on ocean currents, which he said could set off sudden shifts.

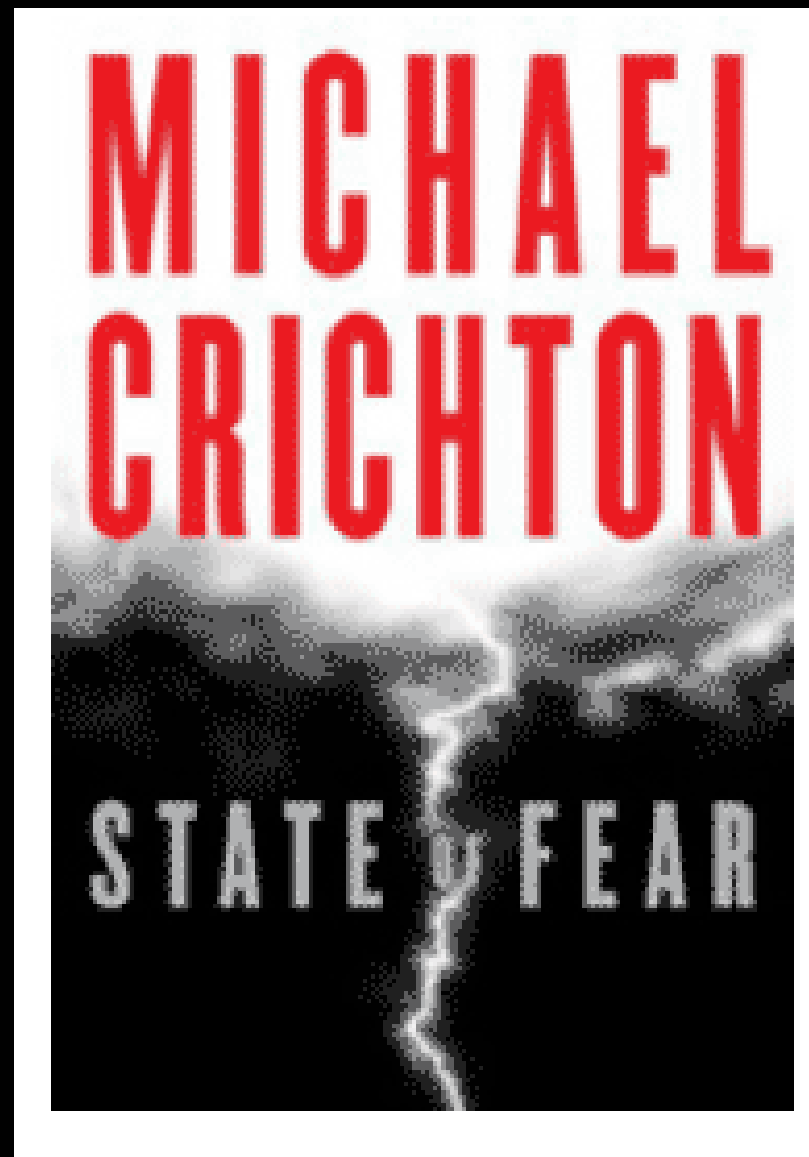
"Two different newspapers wrote articles," he said. "One wrote a highly dramatic article like *The Observer*, confusing a risk analysis with a prediction. The other one wrote there is nothing to worry about, because I said this is unlikely to happen."

What Happens to the public understanding of climate issues when they become the subject of Hollywood movies? Is this “good,” “bad,” or indifferent?



20th Century Fox

What happens  
in popular  
culture and  
public  
consciousness  
when the  
country's  
leading science  
fiction writer  
publishes a new  
novel –  
complete with  
footnotes?



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