POLS303033 Environment, Human Security, and Conflict

Week 3 Lecture Notes

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Overture music

Mos Def. 1999. *New World Water*. https://youtu.be/IZlAWpGZzKo

Lyrics: https://www.azlyrics.com/lyrics/mosdef/newworldwater.html

Smash Mouth. 1999. *All Star*. https://youtu.be/L_jWHffIx5E

Relevant lyrics:

"It's a cool place and they say it gets colder
You're bundled up now, wait till you get older
But the meteor men beg to differ
Judging by the hole in the satellite picture
The ice we skate is getting pretty thin
The water's getting warm so you might as well swim
My world's on fire, how about yours?
That's the way I like it and I never get bored."

Video #1: Introduction

The science is clear—the world is changing because of human activity. Governments and their people have worked to slow this change in small ways and large. Nevertheless, the changes we see are becoming stronger and faster. The worst-case predictions from 20 years ago often underestimated the changes we have actually witnessed.

Today I want to focus on these changes' political causes and effects. For much of the focus on climate change is on what is happening less is focused on the political causes and consequences. This leads me to today's puzzle—Most of the focus is on worrying about what is to come rather than understanding how we got here.

- Why has climate change been politicized?
- Why have domestic and international responses varied so much, even within countries?

One main conclusion is that there has been much more work on the earth science of this change than the political science.

The main parts of today's talk:

1. A changing human relationship with its environment
2. Climate change anomalies
3. Climate and conflict
4. Case studies

Why should we care—What is our legacy? What will we leave behind? How should we live our lives? How can we see David Foster Wallace's water of the day to day mundane existence?

And applying the conflict lens we have used the last three weeks, how are environmental changes linked to violent political conflict?

Let's start with a few blasts from the past.

Understanding where we are and where we are going requires a sense of where we have come fromand how long people have worked on these issues.

External videos

UN Conference on the Human Environment in 1972 (https://youtu.be/h3-TqHFkfy8). The video has audio and video out of sync. This was the best quality version of this I could find.

1992 Rio Earth Summit (https://youtu.be/Bn4V23Boeqc) George H.W. Bush, John Major, and Fidel Castro speak on the topic of the environment.

Video #2: Living in the Anthropocene

The climate is changing. D'uh. We have all heard it a million times. People have understood humanity's effects on the world and have worked to protect parts of it for well over 100 years.

This video focuses on two trends in the Anthropocene

Decline in forest cover

Agricultural expansion

Two links to later weeks

Resource depletion

Renewables expansion

Teddy Roosevelt and John Muir, Yosemite, 1903

Ancient Greeks and Romans established protected areas.

In 1783 the Qing Dynasty declared Mongolia's Bogd Khan mountain a protected site.

In 1832 Hot Springs, Arkansas became the first US national reservation.

In 1872 Yellowstone National Park was the first US national park.

In 1879, the NSW premier established Royal National Park.

In 1909 Sweden created Europe's first national park, Sarek National park

The first Earth Day was in 1970, over 50 years ago.

Maurice Strong (former Canadian oilman and hosted both the 1972 Stockholm conference and the 1992 Rio conference.

> For more information about the establishment of national parks see this National Geographic article: https://www.nationalgeographic.com/travel/national-parks/worlds-first-protected-lands-conservation-yellowstone/.

Yosemite burning, 2017

> Despite these protections, even the protected areas are suffering from macro-level changes

Forest cover in Central Europe, 900CE and 1900CE

The developed world has lost a huge amount of forest cover and other natural resources.

Humanity has cut down about half of the world's trees that existed before us.

We will touch on the Colorado river running dry in 2010 in a few weeks.

We will also touch on clean air and the other elements.

Right now, the story of how the earth has changed is in some ways the most visceral.

> Source: Williams, Michael. 2000. "Dark Ages and Dark Areas: Global Deforestation in the Deep Past." *Journal of Historical Geography* 26(1): 28-46.

Graph of forest area (% of land area)

The world keeps losing more of its forests.

People cut down about 15 billion trees per year.

Graphs like this help dramatize the size and scope of recent change.

> Sources: World Bank and Time magazine (https://time.com/4019277/trees-humans-deforestation/)

Graph of forested area (% land area) in Australia, NZ, UK, and USA

Several countries (e.g. NZ and the US) have actually seen growth in their forest cover as the world as a whole sees a dramatic decline.

Graph of forested area (sq. km.) in Australia, NZ, UK, and USA

Of course, it matters whether you look at the values as a total number of km versus a percentage of land.

Graph of arable land (hectacres per person)

Cleared areas are then often used for growing crops, but there is a shrinking of the amount of arable land per person.

We will discuss Malthusian worries about population growth next week

Graph of global population growth

Thanos would say that we have a problem.
Population growth has been relative constant for decades, but predictions going forward are changing in interesting ways we will see next week.

Population growth in three countries graph

United States, India, and China

Graph of employment in agriculture worldwide

So, there are more and more people depending on fewer forests and even fewer acres of productive land per person.

World map of agricultural labor force

Amazingly there are fewer and fewer people working in the agricultural labor force

Share of the labor force working in agriculture, since 1300

It's gone down a bit.

Recent *New York Times* article about cherry picking in the US.

United States graph of people in agriculture

Notice the difference in absolute and relative values of agricultural employment here.

There has been a revolution in productivity since the turn of the 20th century that has allowed fewer and fewer people depend on the land for their survival.

It depends dramatically on where you live.

Some sub-Saharan African countries have over 90% of employment in agriculture.

Burundi in 2019 had 92% agriculture employment.

Up from in 2014.

Australian employment in agriculture

By contrast Australia's percentage is 3%.

Down from almost 5.5% in 1991.

417 visas are huge

From July – December 2019 104,796 working holiday maker visas issued.
Down 9% from previous year.

Source: Department of Home Affairs (https://www.homeaffairs.gov.au/research-and-statistics/statistics/visa-statistics/visit)

Arable land and population growth in China

In China and elsewhere, there are limits to where agricultural production is possible.

Notice the high levels of population and agriculture along the eastern seaboard.

However, with urban areas encroaching, people are now displacing agricultural land, which was once displacing forests and native wildlife.

Resource depletion

As resources get depleted, production has spillover effects, including in pollution of air, water, and land.

DW Article about pollution costing China's economy.

Resource depletion's economic cost in China

60% of underground water is polluted.

Air and water pollution cost 3-6% of GDP in 2008 (Ministry of Environmental Protection (MEP).

Resource and environmental costs 13.5% of GDP in 2005 (Chinese Academy of Sciences).

Air pollution contributed to 1.2 million premature deaths in China in 2010.

Graphs of solar panel installations

It is important to stress that countries can adapt.

And China is adapting faster than most.

As you can see from the increase in solar panel installations.

Lecture question #1: What changes do you think either a decline in agricultural work or resource depletion has on civil war?

In this first section we have focused on how the face of the land has changed and how most of humanity does not have to work the cleared land for a living to generate food to sustain us.

Here are two quick time lapses that viscerally show this change.

External videos

Time lapse: urban explosion (https://youtu.be/AqUSo2hstHI)

Global warming from 1880 to 2021 (NASA) (https://youtu.be/haBG2IIbwbA)

Video #3: Climate change anomalies and its effects

The two time-lapse videos (linked below) show how dramatic the changes to our environment have been.

Annual temperature anomalies timeline

At the global scale, the temperature anomalies video is really crazy.

This visual timeline is another way of showing the dramatic changes occurring since your grandparents have been alive.

Graph of Australian sea and land temperatures

You can plot these timelines for pretty much anywhere on the planet.

Here is one for Australian sea and land temperatures.

Climate Change in Australia, CSIRO's technical report cover

That graph was from this recent CSIRO report.

In includes state-specific projections about future trends

Summary of findings for Canberra

A harsher fire-weather climate in the future (high confidence)

Average number of days over 35C going from 7.1 now to 12 in ten years

Ave. # days over 40C going from .3 now to up to 4.8 in 2090

Daily max temperature histogram

Data going back to 1965.

Notice the relatively rare days under 9C and above 39C

Google map drive to Burrinjuck Dam

Days above 40C by year

Only **4** days above 40C between 1965 and 2000 (35 years).

46 days above 40C since 2000.

Looking towards Parliament House, 5 Jan. 2020

This sort of increased heat has an effect…

Grand Plateau Glacier, Glacier Bay Alaska, 1984

Frame about 40km wide

Grand Plateau Glacier, Glacier Bay Alaska, 2019

Glacier has retreated over 5km.

Source: NASA (https://earthobservatory.nasa.gov/images/147110/grand-plateau-glacier)

Australia adds new colour to temperature maps as heat soars

Europe heat wave press report

Heat wave strikes Kuwait and Middle East

Video of a palm tree catching fire during a Kuwaiti heat wave (https://www.youtube.com/watch?v=YkXZIXxqzxU)

An Epic Middle East heat wave could be global warming's hellish curtain-raiser

2020 media reports about heat waves.

Report about climate exodus from MENA

States' buffering capacity

How can states and peoples respond to this sort of change?

More about this in later weeks on particular topics.

There will be more in Week 11 on domestic responses.

This is a photo from one of the broken levies in New Orleans.

I lived in New Orleans from 2019 to 2012.

Photo of National Guard troops patrolling in New Orleans

Photo of Louisiana bayous

Map of Isle de Jean Charles on Gulf of Mexico

Photo of article: "Resettling the First American 'Climate Refugees'

Source: Davenport, Coral, and Campbell Robertson. The New York Times.

Photo of New York subway system after 2012's Hurricane Sandy.

Photo of NPR article on efforts to prevent flooding in NYC subway system

Photo of NYT article on "Lessons for U.S. from a Flood-Prone Land.

Photo of report "Climate Change Risks to Australia's Coast.

I spent two years living in Sydney

Graph of est. # of existing residential buildings at risk of flooding from a 1.1m sea level rise & a 1-in-100-year storm surge by state.

Graph of exposure to different areas within NSW

Vulnerability of the Sydney Coast to climate change

Tropical cyclone and storm tide risk in Cairns

Video #4: Climate and conflict

Now that we have spent some time talking about several environmental factors including increasing temperatures, rising sea levels, and land usage, it is time to start to link these and other factors to our main focus of the last three weeks, violent conflict.

This photo is from a 2019 joint military exercise between the US and several Western African countries.

There are over 6,000 US Department of Defense troops in Africa, a large number in the Sahel region—one of the areas hardest hit by climate change.

Australian Defence Force global operations

There are also a few Australian troops in the region.

Source: https://www.defence.gov.au/Operations/

Picture of POLS3033 course outline

Issues of climate and conflict are at the heart of this class.

This is the last big picture lecture of the semester.

The next six weeks will be looking at different environmental and human security issues and how they intersect with conflict

WHO environmental change impacts path diagram

We have touched on some of these links and will cover them in more detail in coming weeks.

Homer-Dixon (1994) Environmental Scarcities and Violence Conflict: Evidence from Cases

Picture of title page

An article that led to an influential book.

Like Barnet and Adger (2007) linking environment, human security, and conflict

Homer-Dixon's (1994) causes of conflict

Greenhouse-induced climate change

Stratospheric **ozone depletion**

Degradation and loss of good **agricultural land**

Degradation and removal of **forests**

Depletion and pollution of **fresh water** supplies

Depletion of **fisheries**

Environmental change and conflict Homer-Dixon's expected relationships

H1 (**simple-scarcity wars**): Decreasing supplies of physically controllable environmental resources will lead to conflict.

H2 (**group-identity conflicts**): Large population movements caused by environmental stress will lead to conflict.

H3 (**deprivation conflicts**): Environmental scarcity will lead to increased economic deprivation and disruption social institutions which will lead to conflict

Homer-Dixon's (1994) sources of renewable resource scarcity

Environmental change shrinks the resource pie.

Population growth divides the pie into smaller slices.

Unequal resource distribution means that some groups get disproportionately large slices.

Unequal resource distribution (Gini index)

Australia and Brazil

See the next video for an explainer of Gini index creation

Homer-Dixon sources and consequences of environmental scarcity path diagram

Is Homer-Dixon's (1994) case selection process useful in reaching generalisable conclusions?

	Conflict		
Environmental scarcity		**Yes**	**No**
	Yes		
	No		

He is selecting on both the independent and dependent variables.

Lecture question #2: What are a few costs and benefits of only looking at cases where there is both environmental scarcity and conflict?

Video #5: Climate, resources, and conflict

Examples of international/domestic resource conflicts

Wars have long been linked to primary commodities and non-renewable resources

War/conflict/crisis	Primary commodities
American revolution	trade routes & commodities
American civil war	cotton & other agricultural commodities, slave labor
Chile-Bolivia's War of the Pacific, 1879-83	nitrate
Finnish-Soviet war	nickel
Iraq's invasion of Kuwait	oil
Liberia	timber
Sierra Leone	diamonds
Côte d'Ivoire	cocoa
South China Sea dispute	oil

Why are non-renewable resources more a subject of conflict?

Non-renewables like oil and mineral resources can be more easily converted into state power.

States that are more dependent on non-renewables are poorer.

Manantali Dam, Mali photo

Hydro-electric power is a renewable resource that can also be controversial.

It looks so peaceful.

In Senegal and Mauritania, Ethnic Conflict Rages Amid Talk of War

The building required the displacement of 10,000 people from the flooded area.

Even more were caught in population displacements across borders

Ethnic clashes occurred as well as clashes by livelihood—herders and farmers.

It cost over a billion Euros to build. Most funding came from international sources.

In 2006 in Mali more than 90% of all electricity generated came from Manantali, in Mauritania 34% and in Senegal 13%.

Source: Tempest, Rone. 1989. "In Senegal and Mauritania, Ethnic Conflict Rages Amid Talk of War." *Los Angeles Times.* June 3, 1989.

Canberra's light rail could drive up property values along tram line

Not a unique story to this region.

In Canberra development also brings up issues of inequality.

Source: Kelly, Emma. 2016. “Canberra’s Light Rail Could Drive Up Property Values Along Tram Line.” Domain. May 18, 2016.

Tram speeds development, property prices in Northbourne corridor

Source: Lawson, Kirsten. 2019. “Tram Speeds Development, Property Prices in Northbourne Corridor.” *Canberra Times*. June 22, 2019.

Coping strategies

Continue to rely on resource but **compensate** those who have limited resource access.

Shift economy away from resources that are being depleted. Both strategies require **government resources.**

Climate change and conflict

Climate change is a threat multiplier for instability. (Salehyan 2008: 316 quoting US military officers’ report; emphasis added)

No evidence yet that environmental degradation is a necessary or sufficient condition for armed conflict.

What is important is the interactive effect of environmental and political systems.

“In short, resource scarcity, natural disasters, and long-term climatic shifts are ubiquitous, while armed conflict is rare; therefore, environmental conditions, by themselves, cannot predict violent outbreaks.” (Salehyan 2008: 319; emphasis added)

Salehyan’s (2008) areas for research improvement

Develop better measures of **political institutions.**

Develop **exogenous measures** (natural conditions that humans cannot control) of **environmental stress.**

Model **endogenous relationships** (e.g., between environment pressures and political failures).

Look for interactive, **contingent** effects**.**

He highlights a research gap.

Buhaug & Theisen (2012) add two additional factors

The environmental and social **costs of resource extraction**

The **environmental impacts** of conflict

How many links between climate and conflict can you think of?

If you can think it Hsiang et al.(2013) probably tested it.

Photo of first page of Hsiang et al. (2013)

Hsiang et al. (2013) table of quantitative models

What do you think about the various types of dependent variables?

Climate and conflict across spatial scales

Graph from Hsiang et al. (2013: 1,212)

Any links to Simpson's paradox?

Projected temperature change by 2050 world map

Map from Hsiang et al. (2013: 7).

Hot weather can make almost anyone frustrated.

Ambient temperature and horn honking

What a clever research question!

Graph of temperature and horn honking

Video #6: Case study—Venezuela

A whole lot of slides about how bad the situation is in Venezuela.

Please watch the Financial Times and France 24 video on Venezuela. While you are watching it, I want you to think
about the following question and explain why you reached the conclusion you reached:

Lecture question #3: If Venezuela does slide into conflict, should it be attributed to:

1) The political and economic decisions of Hugo Chavez and Nicholas Maduro
2) US sanctions
3) Geography and geology
4) Something else (explain what)

Videos from Venezuela

Financial Times. 2020. How Venezuela's oil industry collapsed.https://youtu.be/qSDLsKMPhuE

France 24 English. 2022. Venezuela grapples with endless crisis. https://youtu.be/vgDCSxSUcso

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Exeunt music

Glenn Frey. The Heat is On. https://youtu.be/uZD8HKVKneI.