

## POLS303033 Environment, Human Security, and Conflict

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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](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.”

**Billie Eilish. 2019. *All the Good Girls Go to Hell*.** <https://youtu.be/-PZsSWwc9xA>

*From the video description:* “A note from Billie: right now there are millions of people all over the world begging our leaders to pay attention. our earth is warming up at an unprecedented rate, icecaps are melting, our oceans are rising, our wildlife is being poisoned and our forests are burning. on september 23rd, the UN will host the 2019 Climate Action Summit to discuss how to tackle these issues. the clock is ticking. on friday september 20th and friday september 27th you can make your voice be heard. take it to the streets. [#climatestrike](#)”

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### 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 and how long people have worked on these issues.

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### **Video: 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.

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### **Video: 1992 Rio Earth Summit**

<https://youtu.be/Bn4V23Boeqc>

George H.W. Bush, John Major, and Fidel Castro speak on the topic of the environment.

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## 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—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
- 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 (hectares 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
- 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

### **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 20<sup>th</sup> 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 104796 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.

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### **Video: Time lapse: urban explosion**

<https://youtu.be/AqUSo2hstHI>

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### **Video: Global temperature anomalies from 1880 to 2019 from NASA**

<https://youtu.be/3sqdyEpkIFU>

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### **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.
- It 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**

- Too far to drive to record a video

### **Days above 40C by year**

- Only four 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**

**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
- Also 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**



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## **Video #4: Climate and conflict—Homer-Dixon (1994)**

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 Barnett 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		
		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?**

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**Video: Understanding the Gini Coefficient**

From Singapore Department of Statistics

Source: [https://youtu.be/BwSB\\_Ugo1s](https://youtu.be/BwSB_Ugo1s)

It is definitely worth your time to watch through to the discussion of equivalence scales.

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### **Video #5: Climate, resources, and conflict**

#### **Examples of international/domestic resource conflicts**

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

<b>War/conflict/crisis</b>	<b>Primary commodities</b>
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**

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## **Video #6: Case study—Burundi**

In previous weeks we learned about the political transitions and conflicts in Burundi  
We learned less about the environmental factors

### **Environmental factors in Burundi**

- Third highest **population densities** in Africa (UN 2015)
  - 401 people per sq. km.; Australia=3.2; Sydney 400; Canberra 443)
- Population **growth** is 3.2%
- 2017 **GDP per capita**: US\$284; GDP pc ppp: \$700)
- **Agriculture** is over 50% of GDP, 90% of exports and supports over 90% of labor force
- **Forest cover** decreased from 46% to 3.5% since independence (1962) from Belgium.
- 49% have access to **clean water**.
- Over 90% of energy usage is burning **wood, charcoal or peat**.
- Two **hydroelectric dams** produce 85% of domestic electricity.

### Graph of Burundi's population growth

### Graph of Burundi Polity2 over time

### Cover page of 2006 USAID report: "The Link Between Land, Environment, Employment, and Conflict in Burundi.

Few answers about soap suggested an engagement with the actual video I shared about soap production in Burundi.

### Takeaways from Burundi

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#### Videos—Burundi

Video 1—Short description of a local initiative to transform corn cobs into charcoal. Over 90% of domestic energy use comes from wood, so this initiative aims to decrease deforestation pressures. <https://youtu.be/bAiCK8FHdRM>

Video 2—A video from the UN's Food and Agricultural Organization about soil erosion due to deforestation, overuse, and climate change in Burundi and neighboring countries. <https://youtu.be/dtSzajgznfY>

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#### Video #7: Case study—Venezuela

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

Please watch the Al Jazeera 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:

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)

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### **Videos from Venezuela**

Video: Al Jazeera. From Riches to Rags: Venezuela's economic crisis  
<https://youtu.be/mL8d91vdR9g>

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### **Exeunt music**

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