

A Tale of Tragedies

A photograph of a large, jagged iceberg floating in the Arctic sea. The iceberg is the central focus, with a sharp, pointed peak. The water is dark blue, and the sky is a clear, bright blue. In the background, other icebergs and a snowy mountain range are visible. The overall scene is cold and desolate.

The Arctic

As permafrost thaws in the Arctic, huge pockets of methane -- a potent greenhouse gas -- could be released into the atmosphere. Experts are only beginning to understand how disastrous that could be.





Introduction Outline

- Session 1 The Problem of the global Commons
- Session 2 Climate Change
- Session 3 Resource Depletion and Exploitation
- Session 4 Climate Change, Resource Depletion, and Conflict
- Session 5 Nature, Wealth, and Poverty
- Session 6 Possible solutions

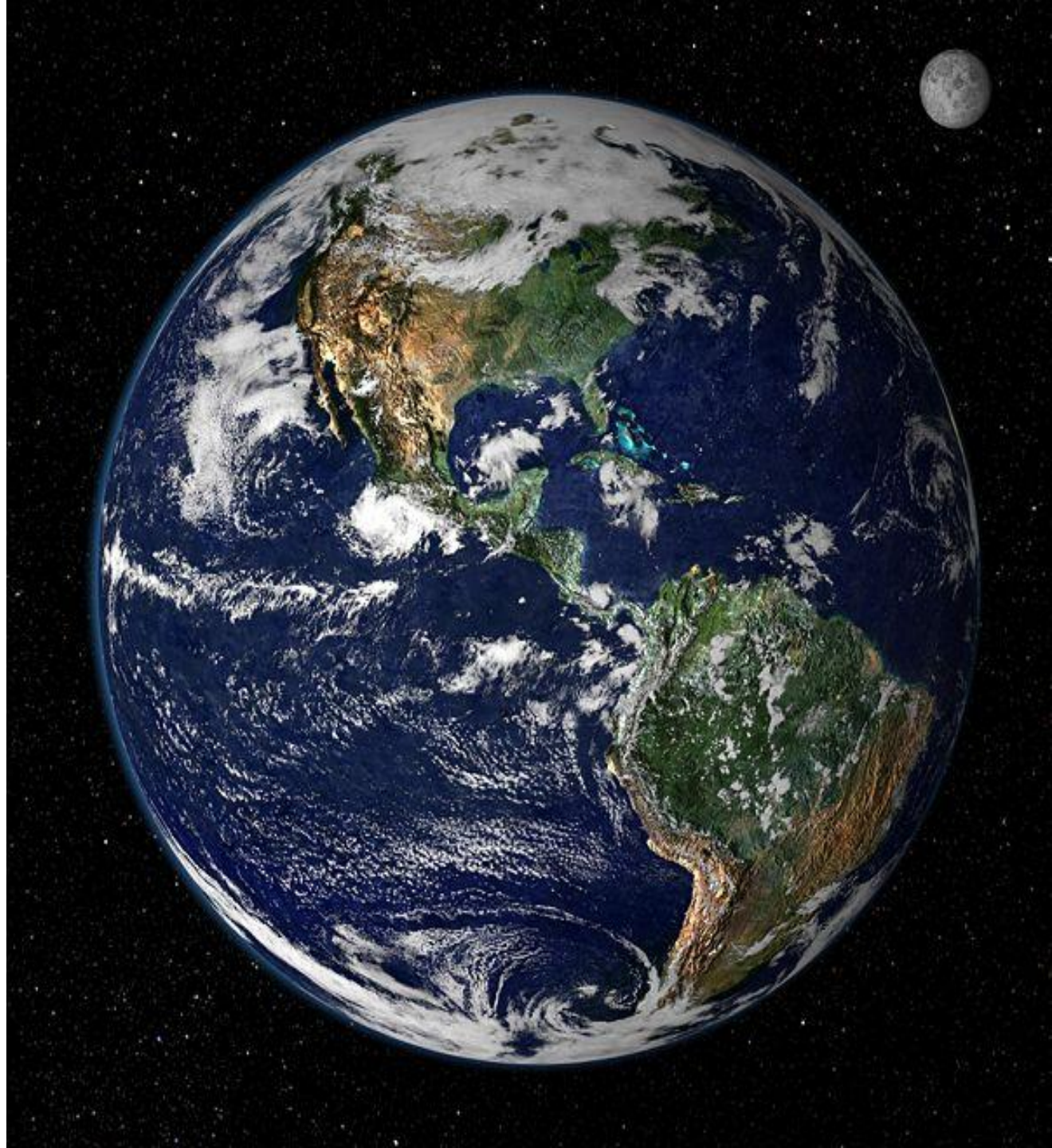
Problems of the Global Commons



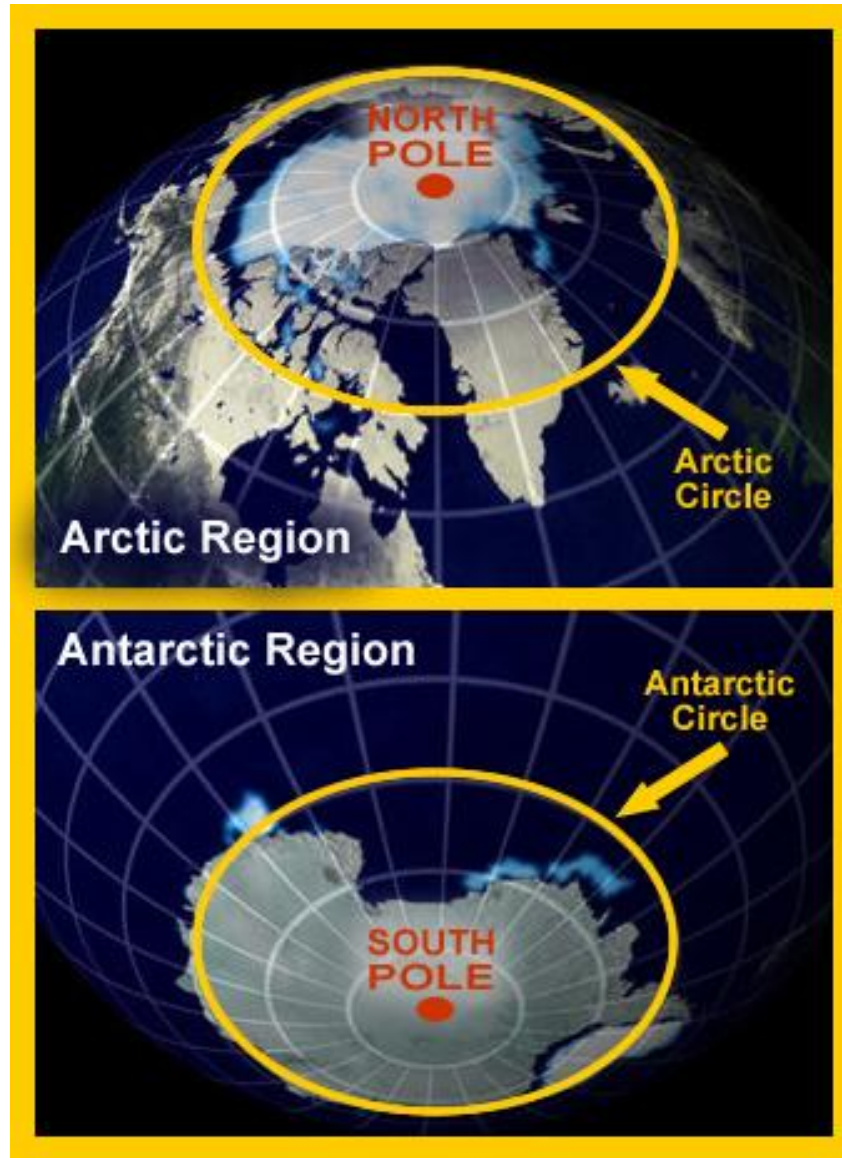
The Commons







Are the Polar Regions part of the Global Commons?





Tragedy: Overgrazing







Climate Change: Tragedy of the Commons

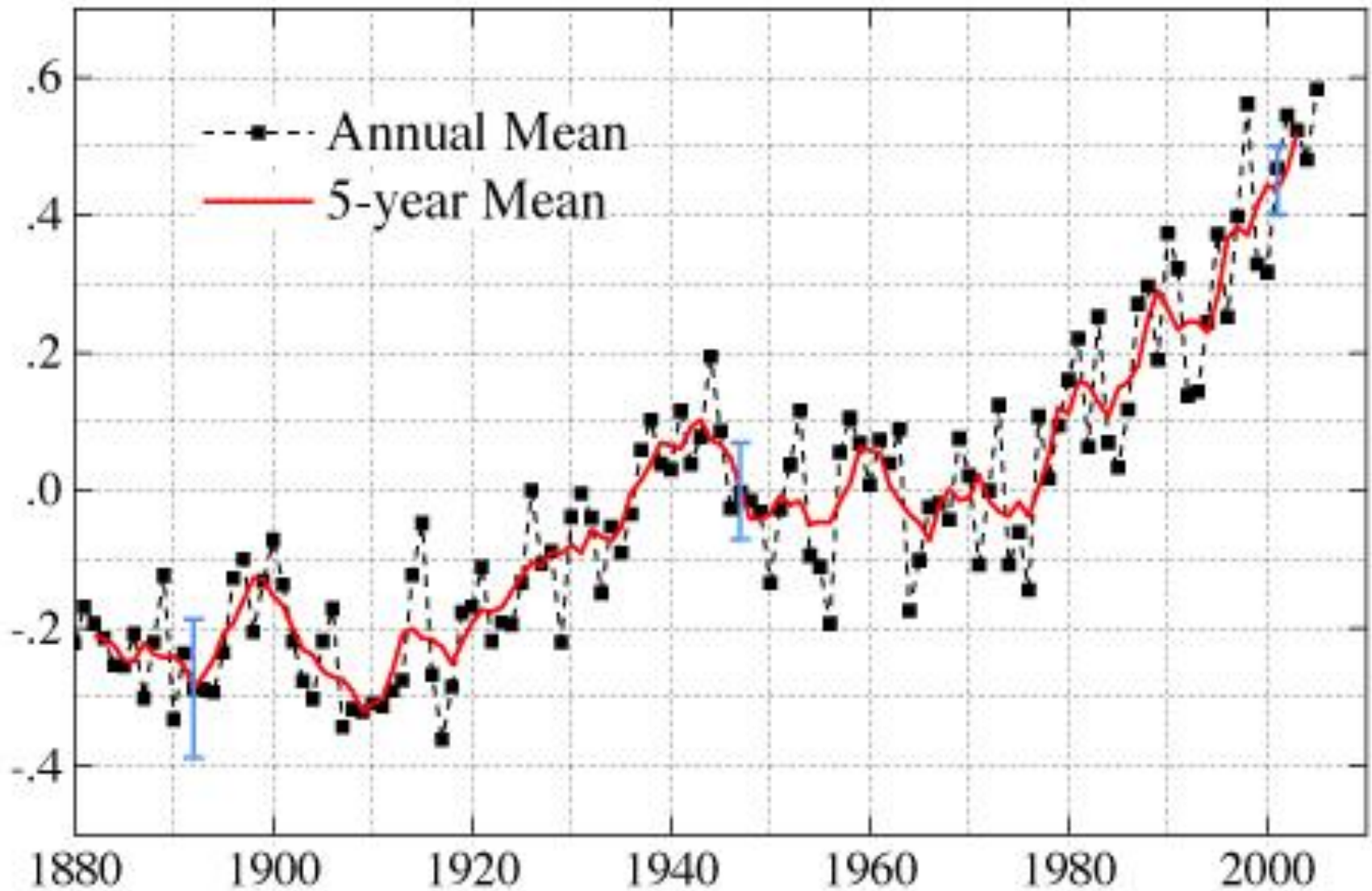


How much warming?

<http://www.breathingearth.net/>

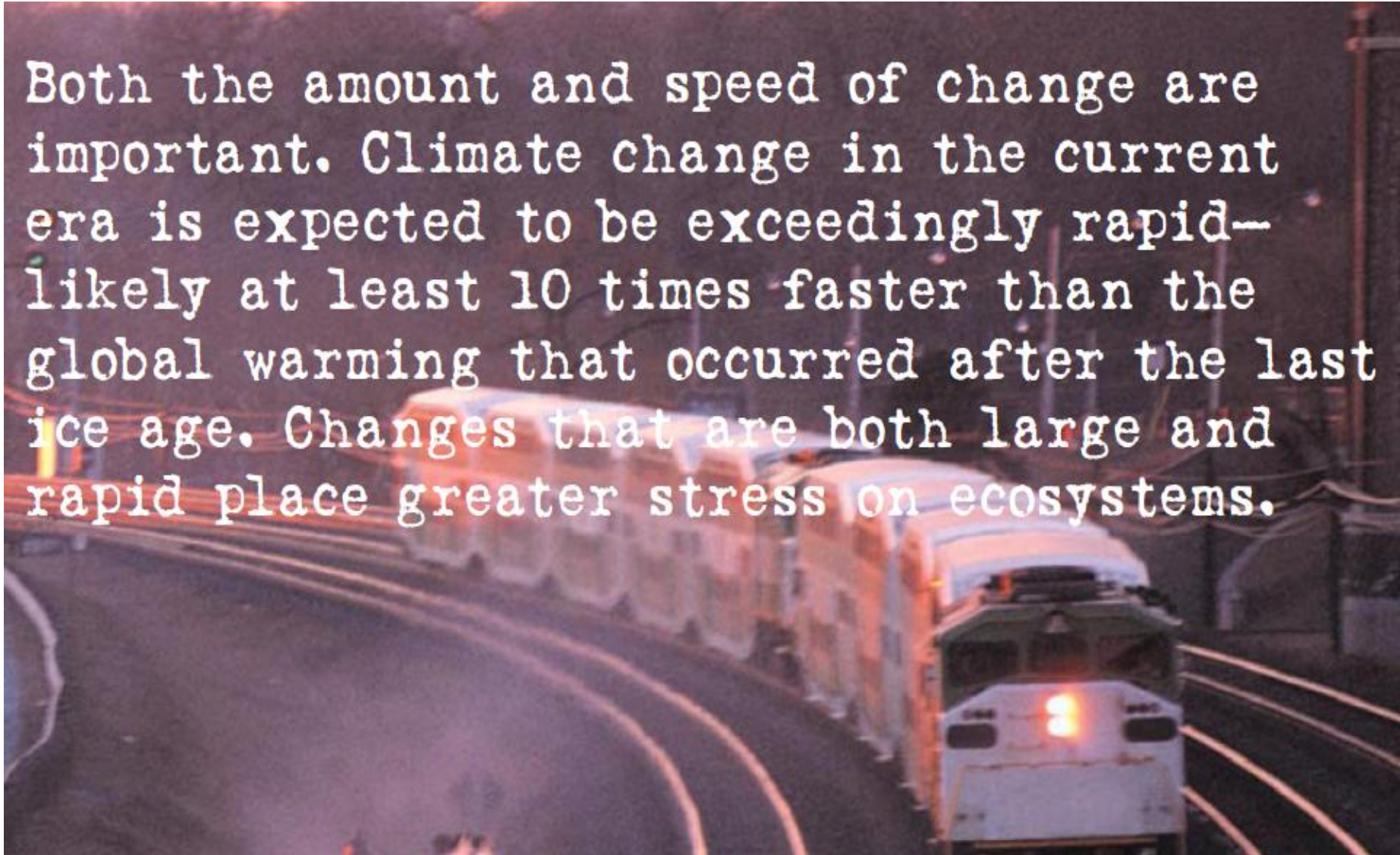


How much warming?



So What?

Both the amount and speed of change are important. Climate change in the current era is expected to be exceedingly rapid—likely at least 10 times faster than the global warming that occurred after the last ice age. Changes that are both large and rapid place greater stress on ecosystems.



Causing.....



And Affecting California Wines



Climate change affects managed ecosystems, like vineyards, just as it affects natural ecosystems—with corresponding major economic and social implications.

Arctic sea ice is melting



Glacier melting



MELTING SEAS RISING SEA LEVEL SYNDROME



JOSEPH
FARRIS

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Consequences of rising sea levels



Sea surface temperatures are warming



Heavier rainfall cause flooding in many regions



Extreme drought is increasing

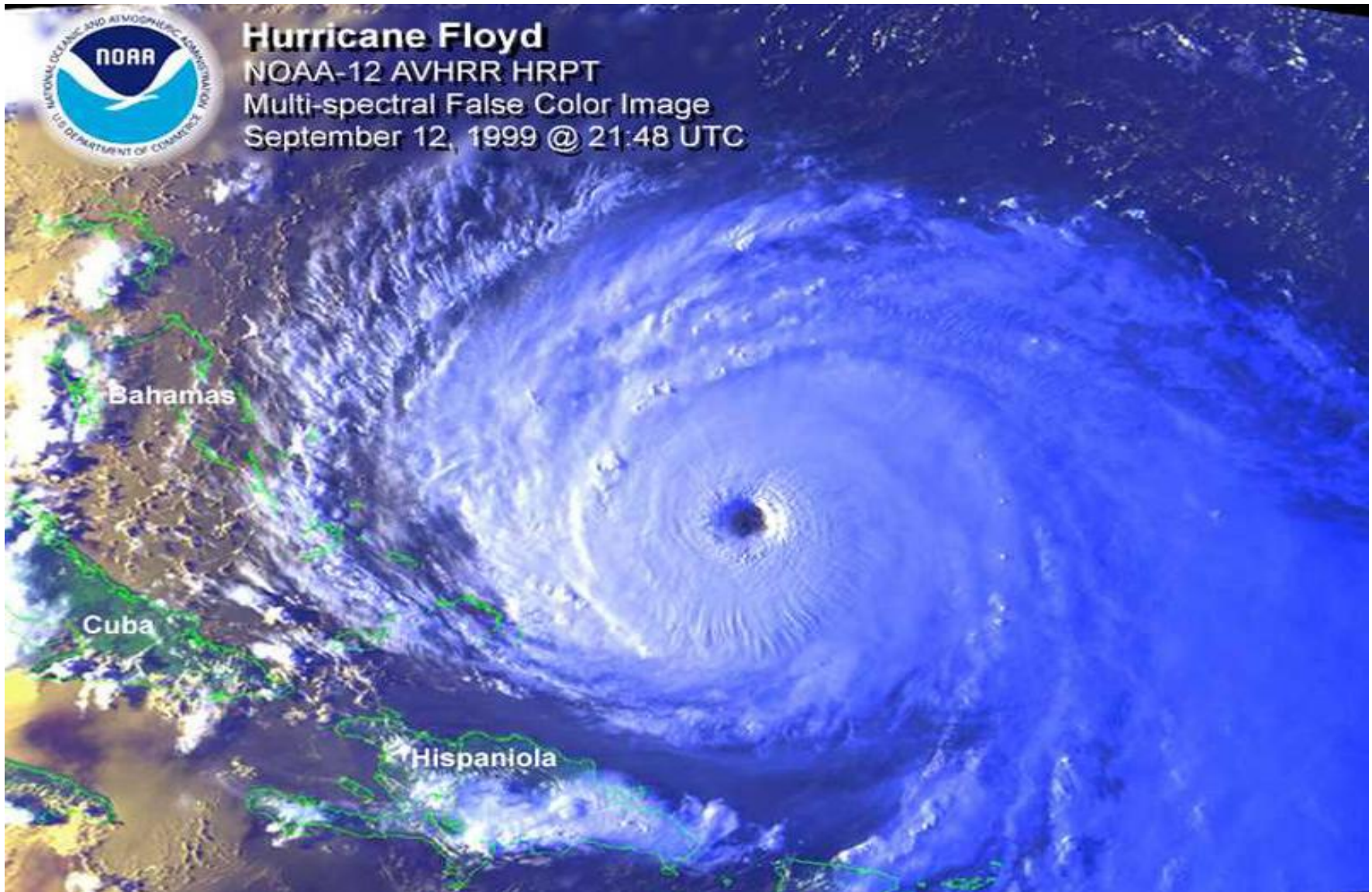


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Ecosystems are changing.



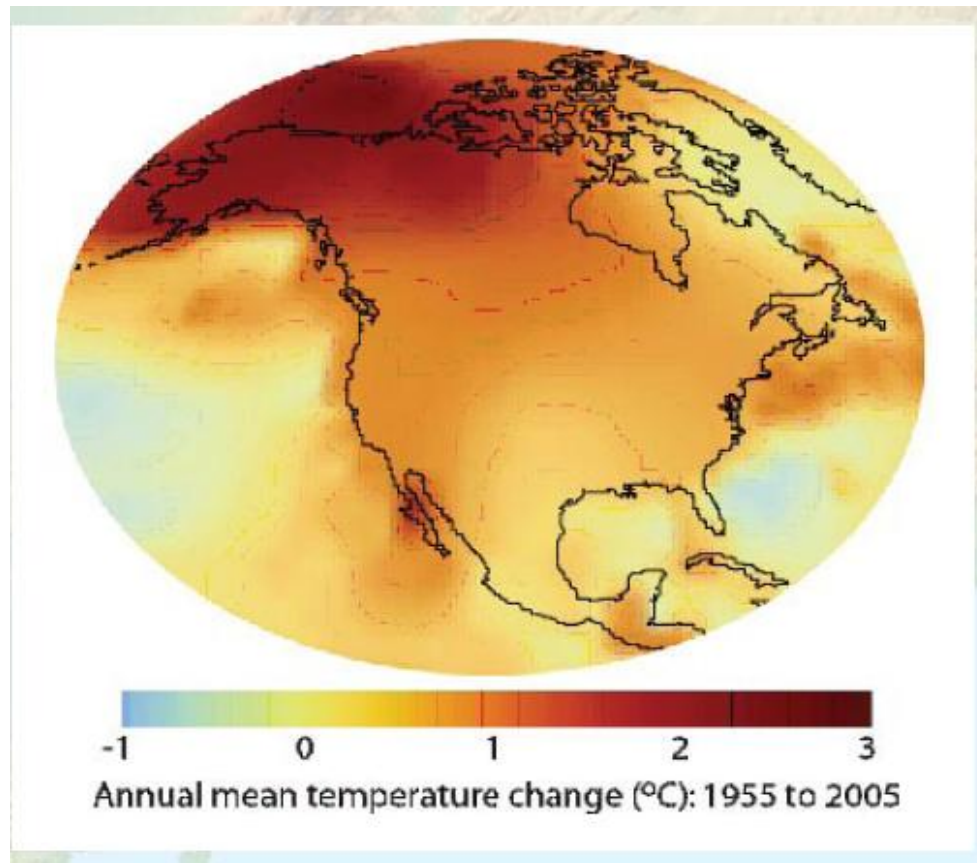
Hurricanes have changed in frequency



What is climate change got to do with the Arctic and why is this a tragedy?



Arctic is heating up faster than the rest of the world.....



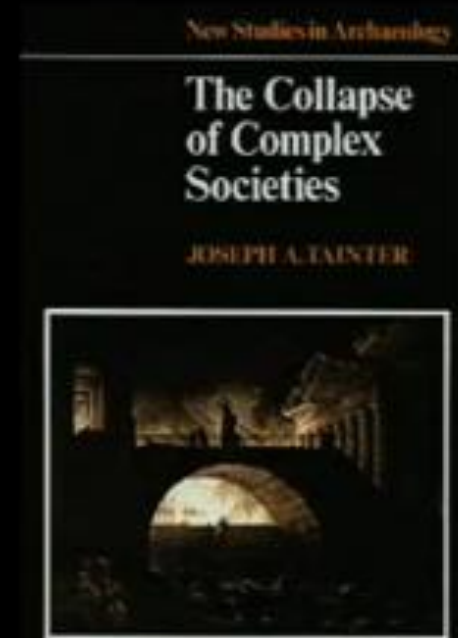
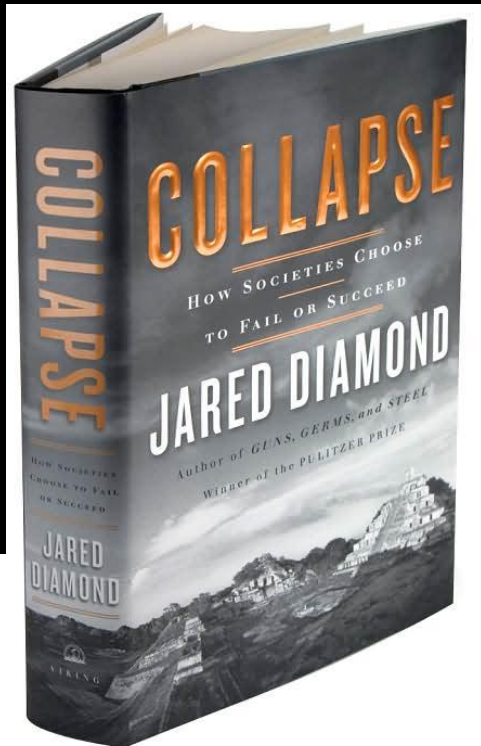
On average Arctic temperatures have risen twice as fast as in the rest of the world.



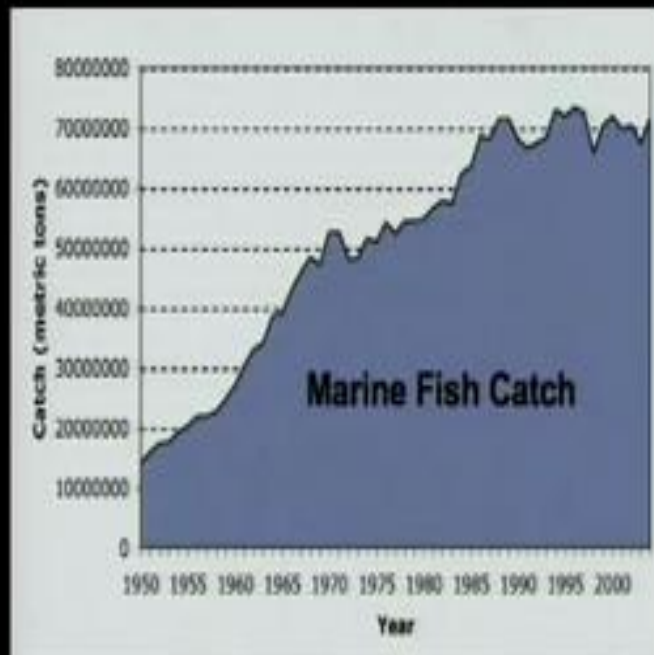
A Second Tragedy of the Commons: Resource depletion



- A society that continues to use resources unsustainably will collapse.

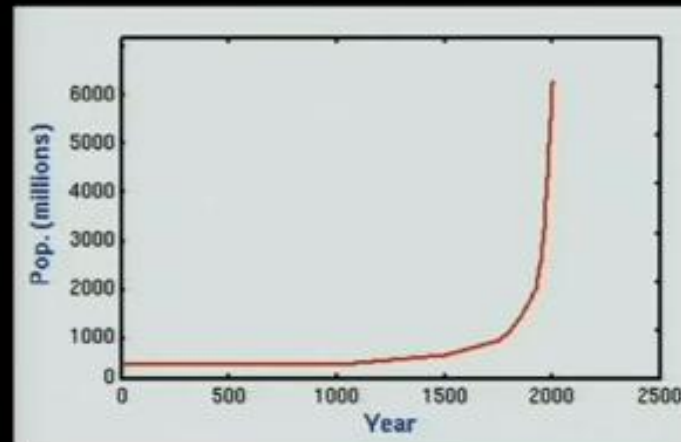


- To be sustainable, the use of **renewable** resources must proceed at a rate that is less than or equal to that of natural replenishment.

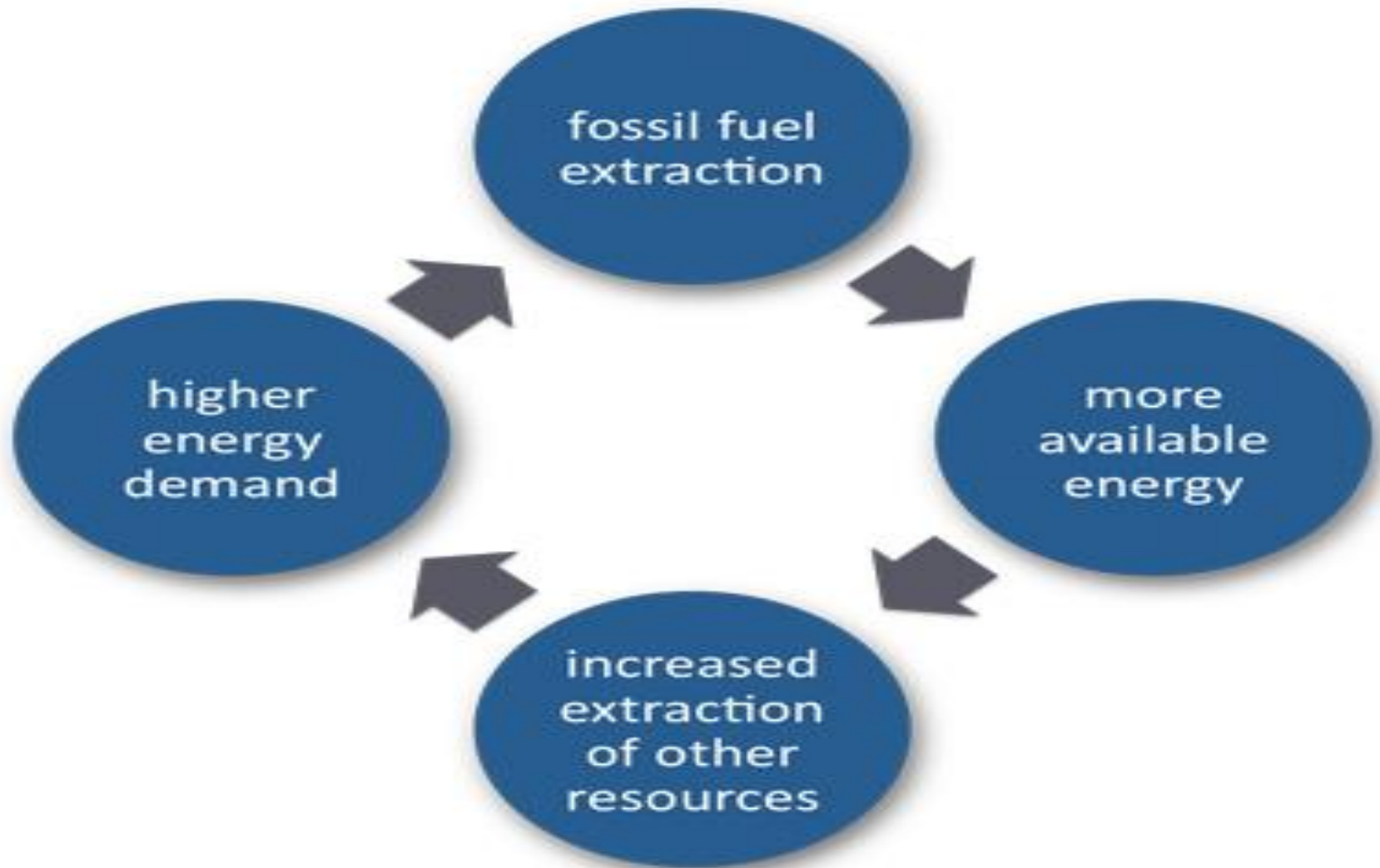


Population Growth

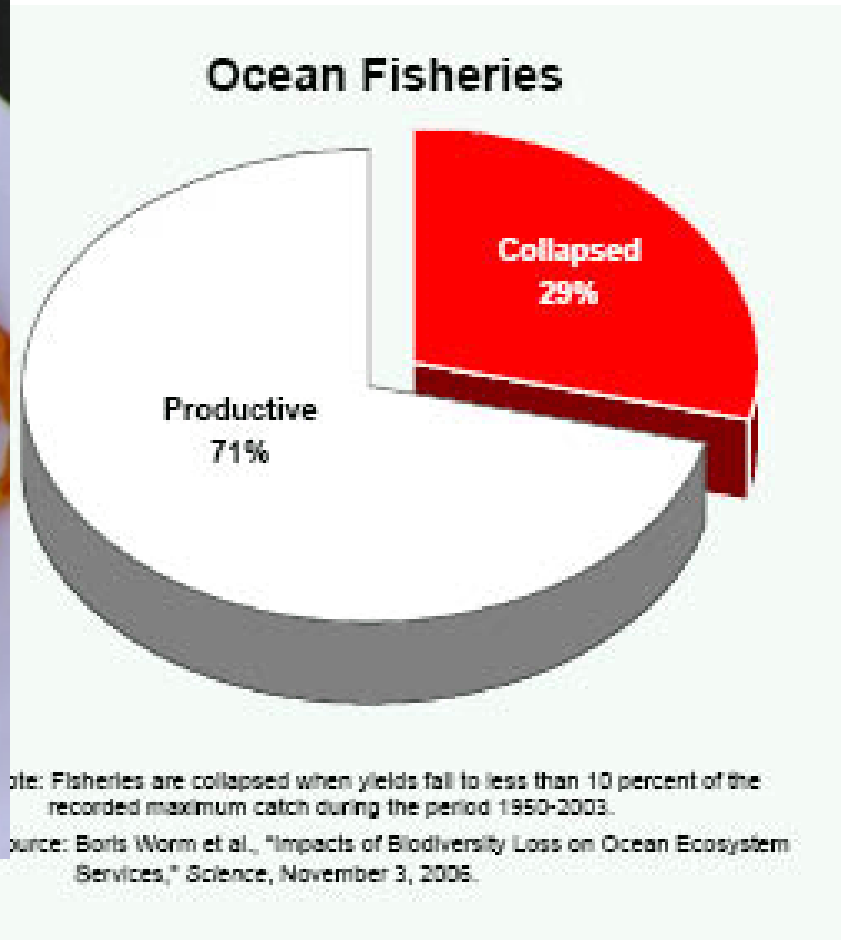
- Population growth and/or growth in rates of consumption of resources cannot be sustained.



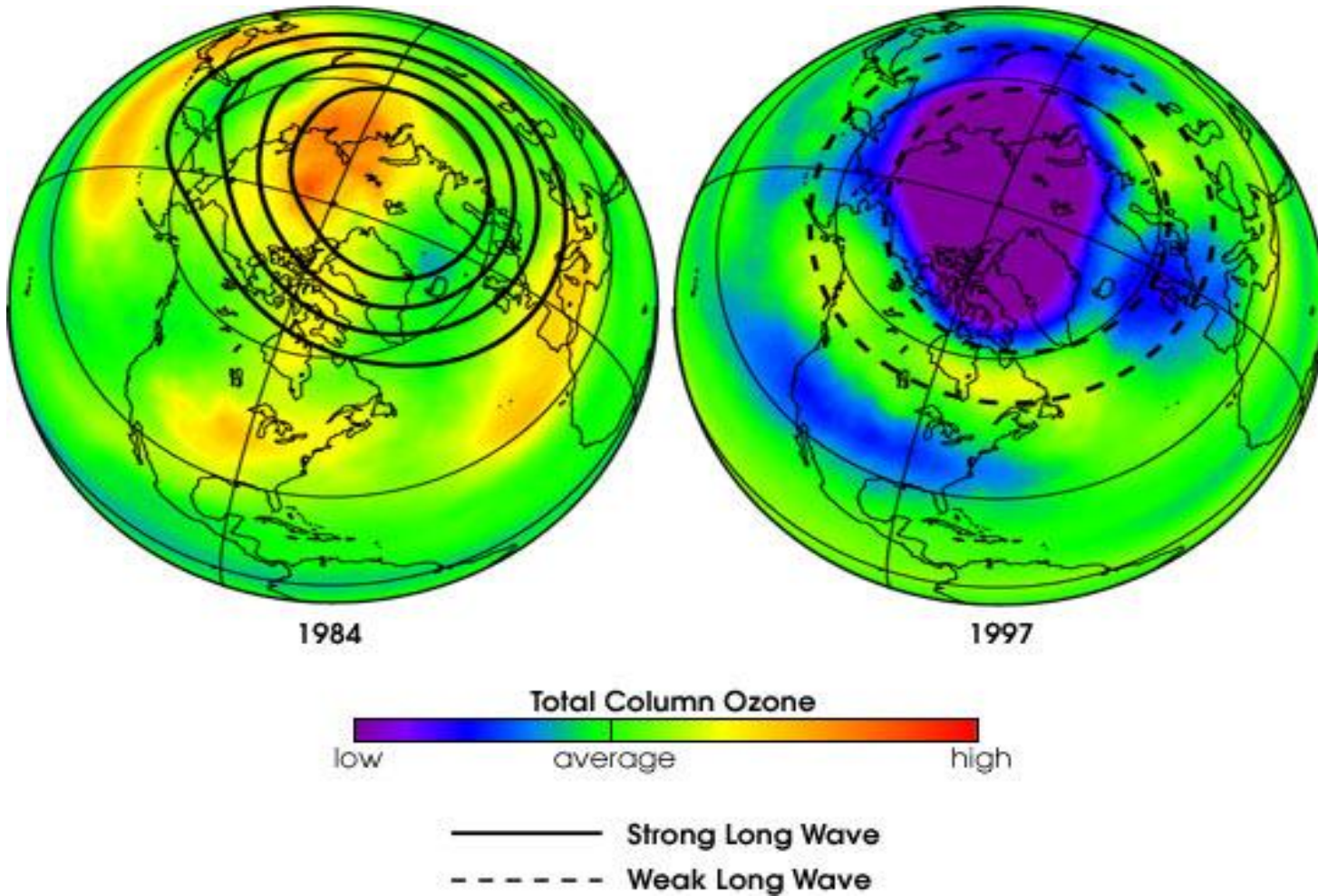
Feedback effects....



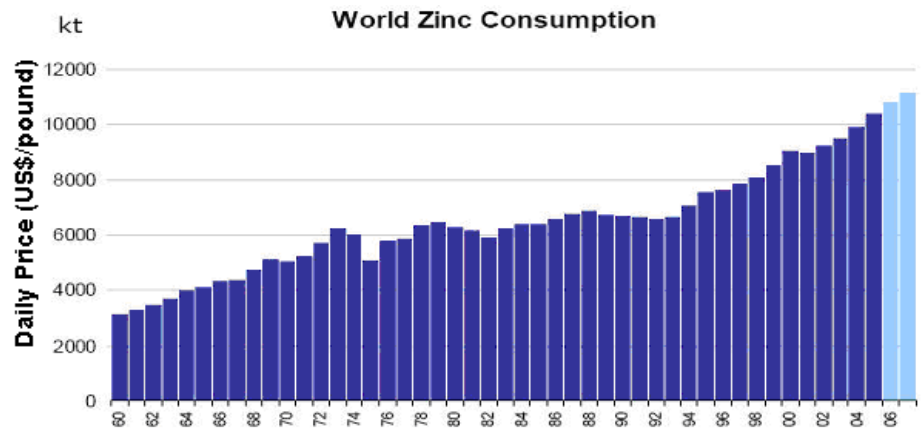
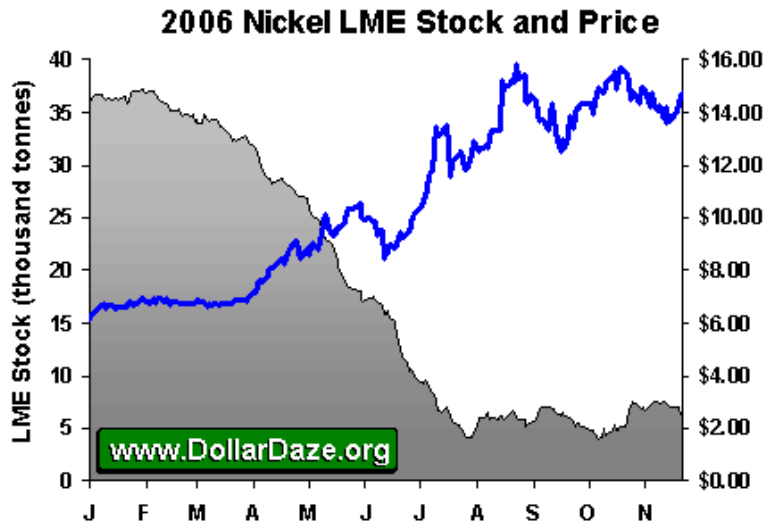
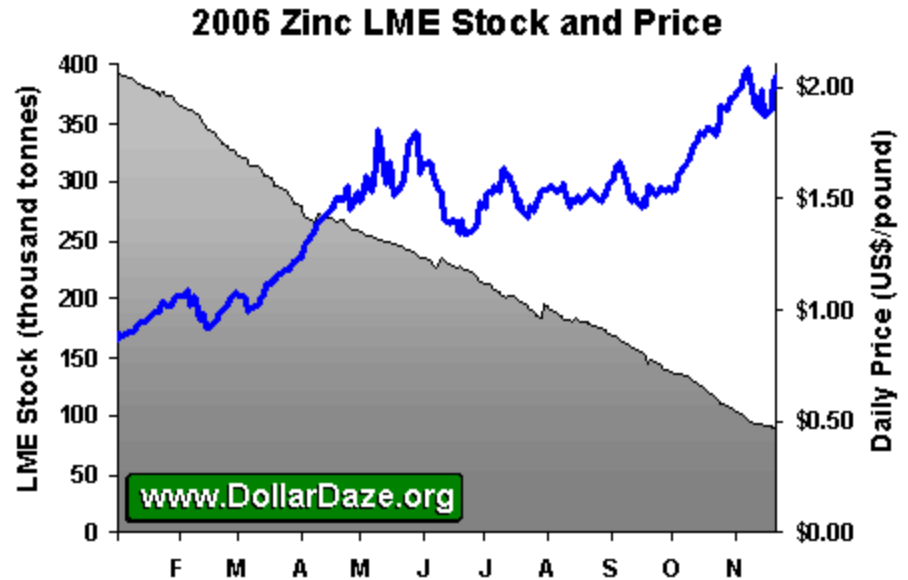
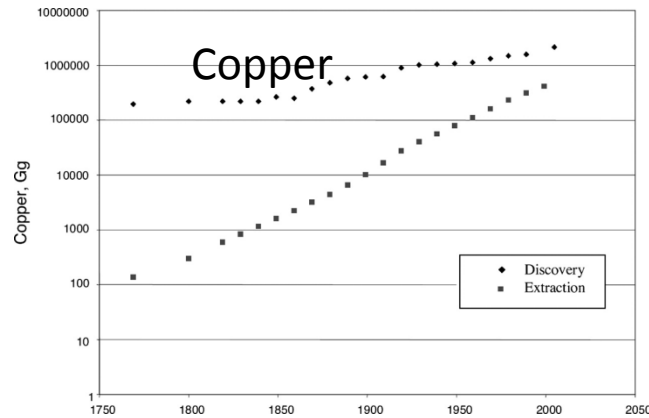
Fisheries collapse



Ozone Depletion



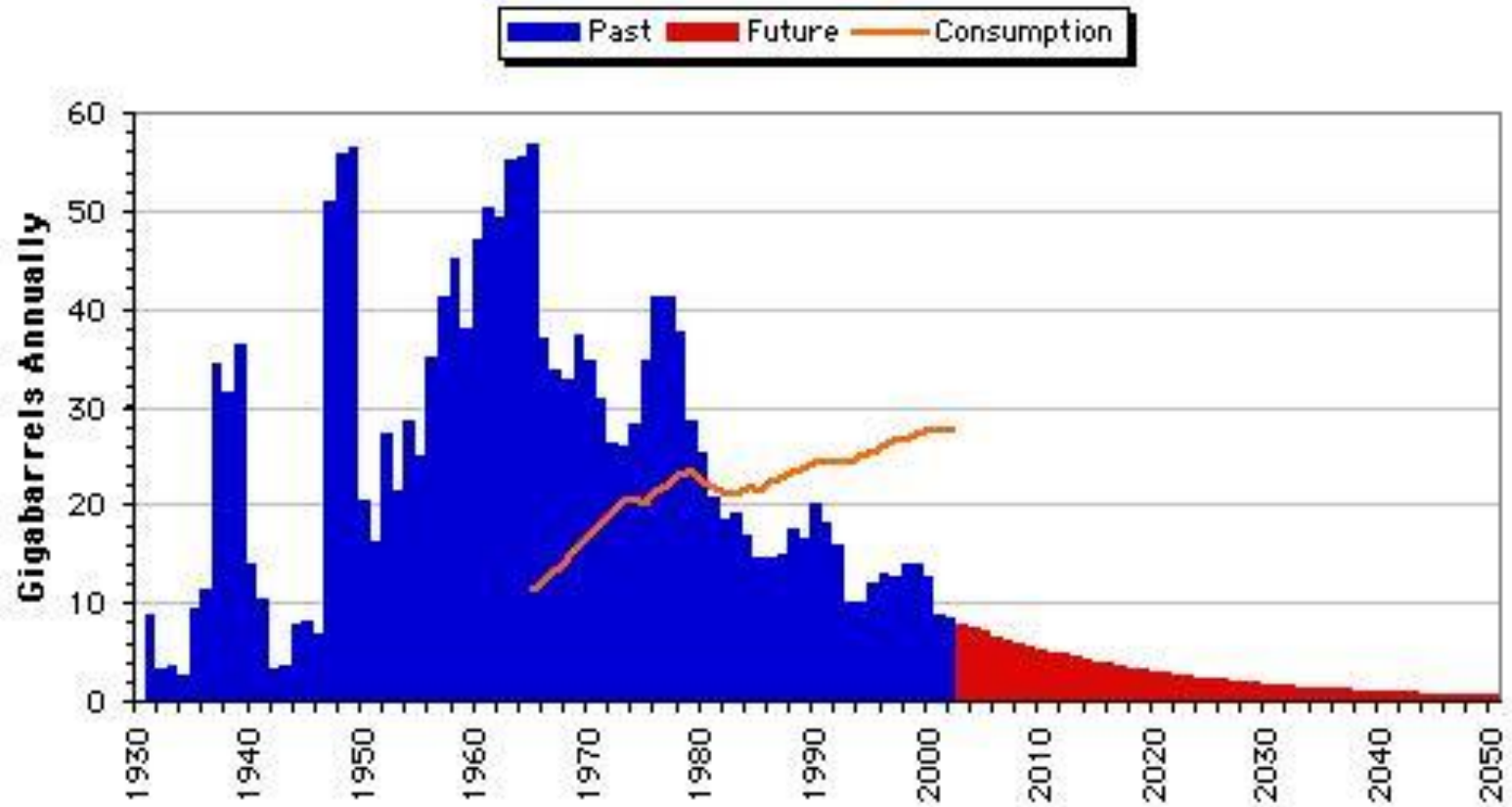
Depletion of global metal supplies



Arctic Alaska mineral resources

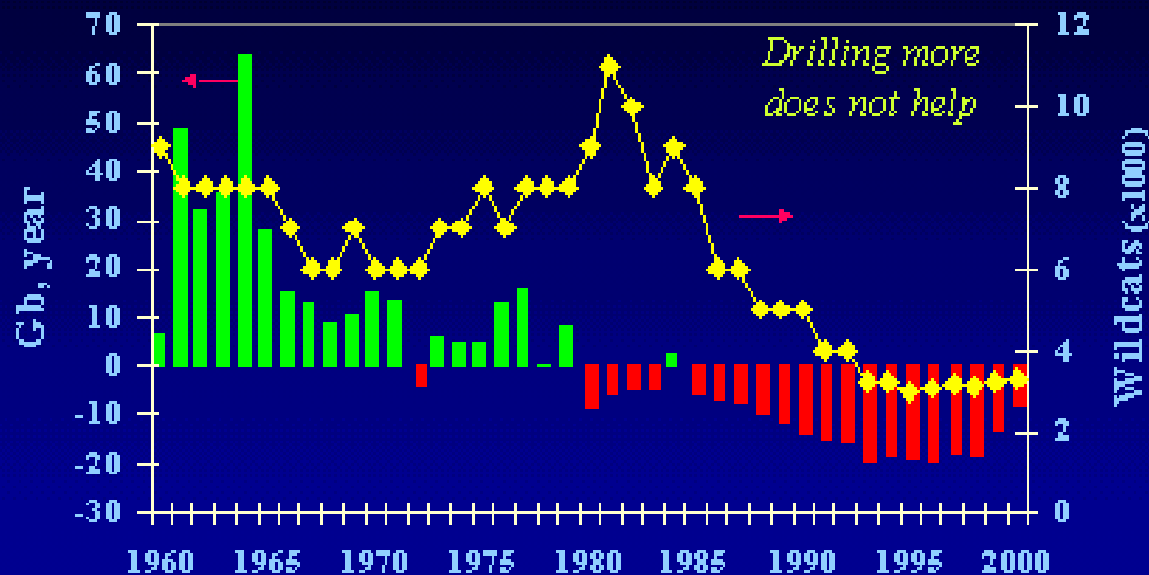


Oil



Declining supply of oil

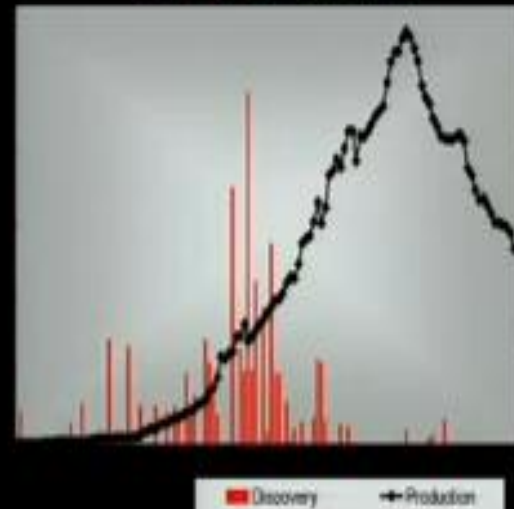
The Growing Gap between Discovery and Production



Oil production is not sustainable

- To be sustainable, the use of **non-renewable** resources must be declining at a rate greater than or equal to the rate of depletion.

US Oil Production



Depletion leads to exploitation

New discoveries look promising...

- Brazil
- Gulf of Mexico
- Bakken shale (Montana)
- Arctic regions



- Sum: Climate Change and Dwindling Resources: An explosive combination and a double tragedy----back to a little theory of the tragedy of the commons

Privatization



Modern Privatization of the Commons: New Enclosures

Scramble for the Arctic

As climate change melts ice in the Arctic, several nations are vying for dominance of resources and shipping routes.



Source: National Research Council

MARK NOWLIN / THE SEATTLE TIMES

Attempts to “privatize” cause conflict

- “Climate change will make scarce resources, clean water, viable agricultural land even scarcer”—and this will “make the emergence of violent conflict more rather than less likely.”
 - » British Defense Secretary John Reid

Darfur may well be the first war influenced by climate change.



Darfur as warning sign





Arctic conflict



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Oil.....



An even greater prize ... new sea-lanes created by the great melt.





Nature, Wealth, and Poverty



Climate change and poverty in the Arctic



Some solutions.....

