

# **AVOIDING A CLIMATE ARMS RACE:**

## **WHY WE NEED THE BARUCH PLAN 2.0 FOR CLIMATE GEOENGINEERING**

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# Structure of talk

## 1. The Climate Change Problem

Or, how did we get ourselves into this mess?

## 2. The International Relations Reality

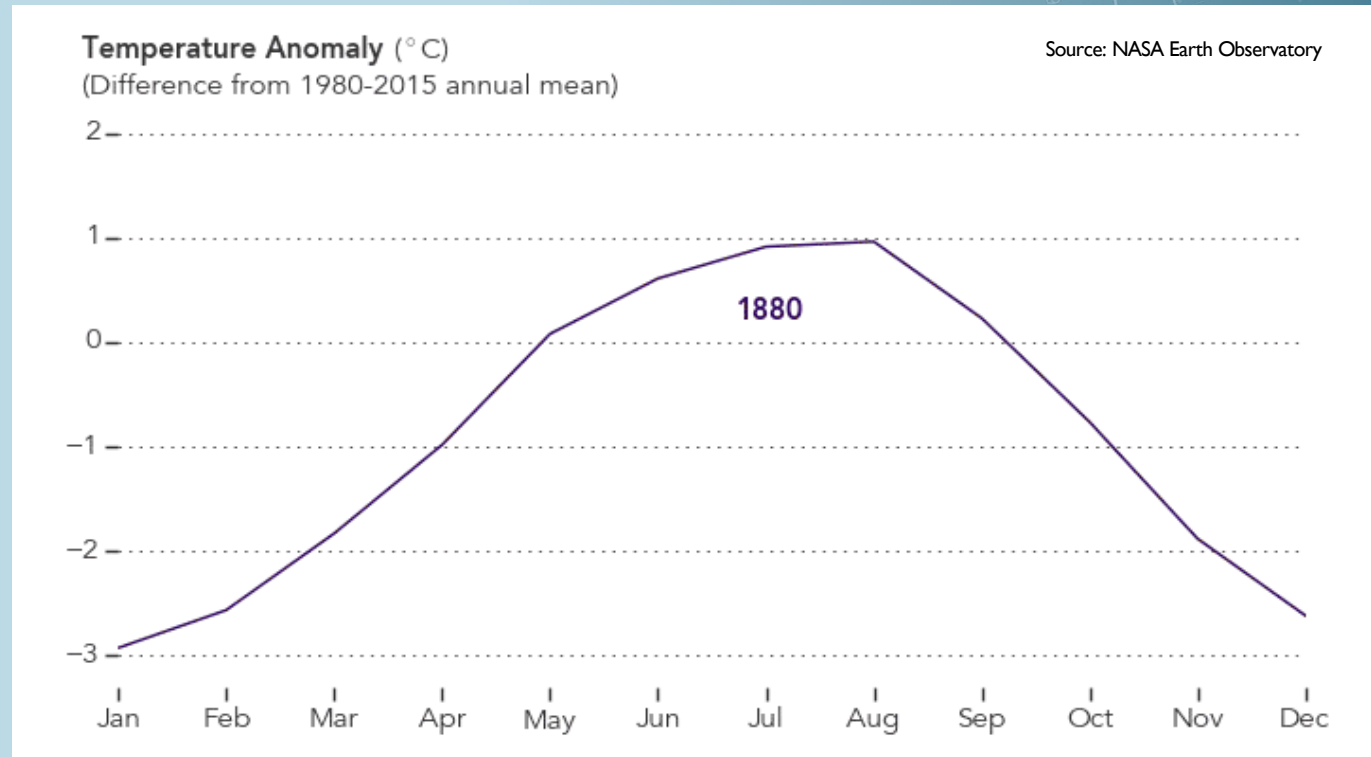
Or, how do you restrain a sovereign state?

## 3. The 1946 Baruch Plan

Or, what went wrong at the UN?

## 4. Baruch Plan 2.0

Or, how can we avoid a climate arms race?





# 1. The Climate Change Problem

Or: How did we get ourselves into this mess?

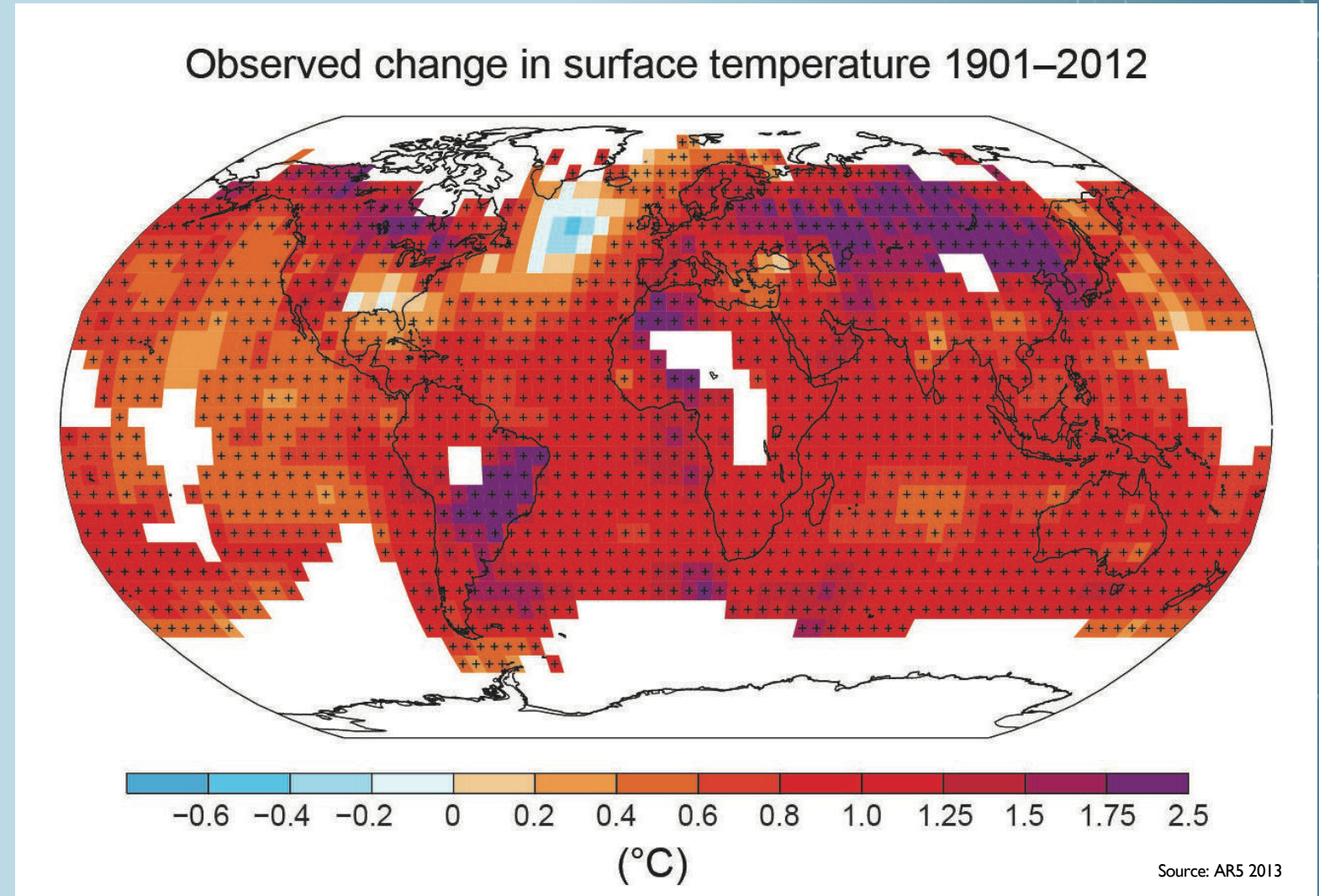
## Present:

Measurements are observed via satellite and other platforms/technologies

Since the 1950s, these changes are unprecedented in speed and scale

Effects include:

Increasing temperatures	Heat waves
Changing precipitation	Floods, droughts
Rising sea levels	Loss of coast, saline intrusion into aquifers
Increasing extreme events	Storms, hurricanes
Decreasing polar ice	Methane outgassing, runaway warming

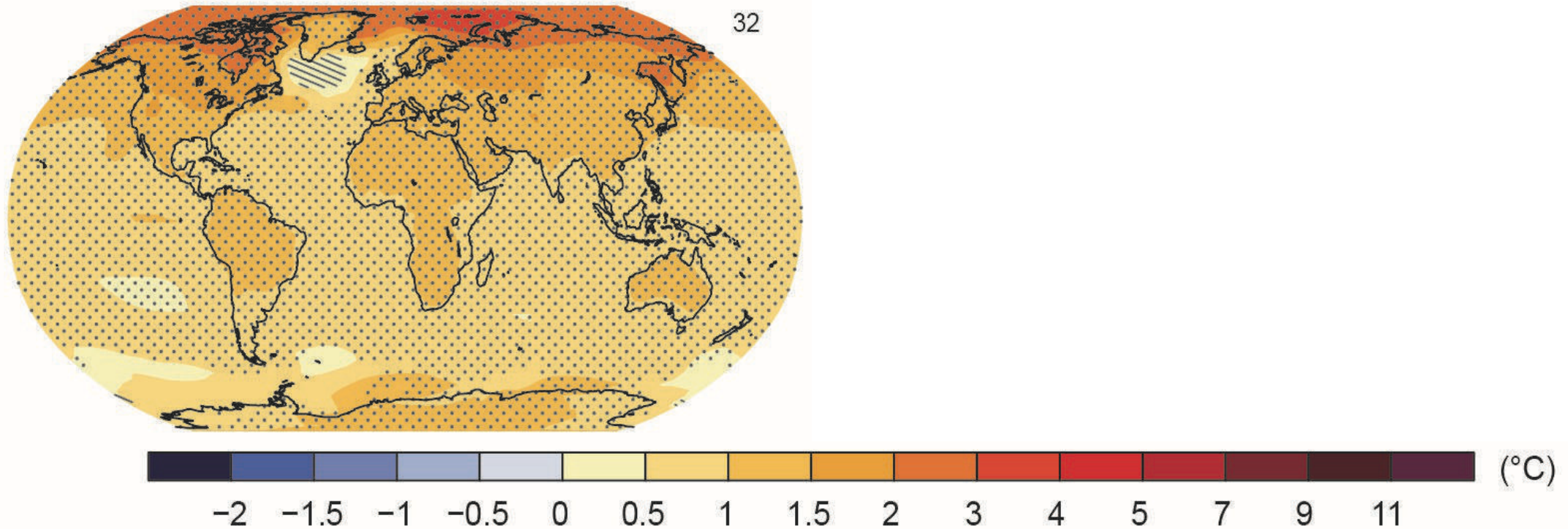


# Future:

↓ RENEWABLE ENERGY EARTH

## RCP 2.6

(a) Change in average surface temperature (1986–2005 to 2081–2100)



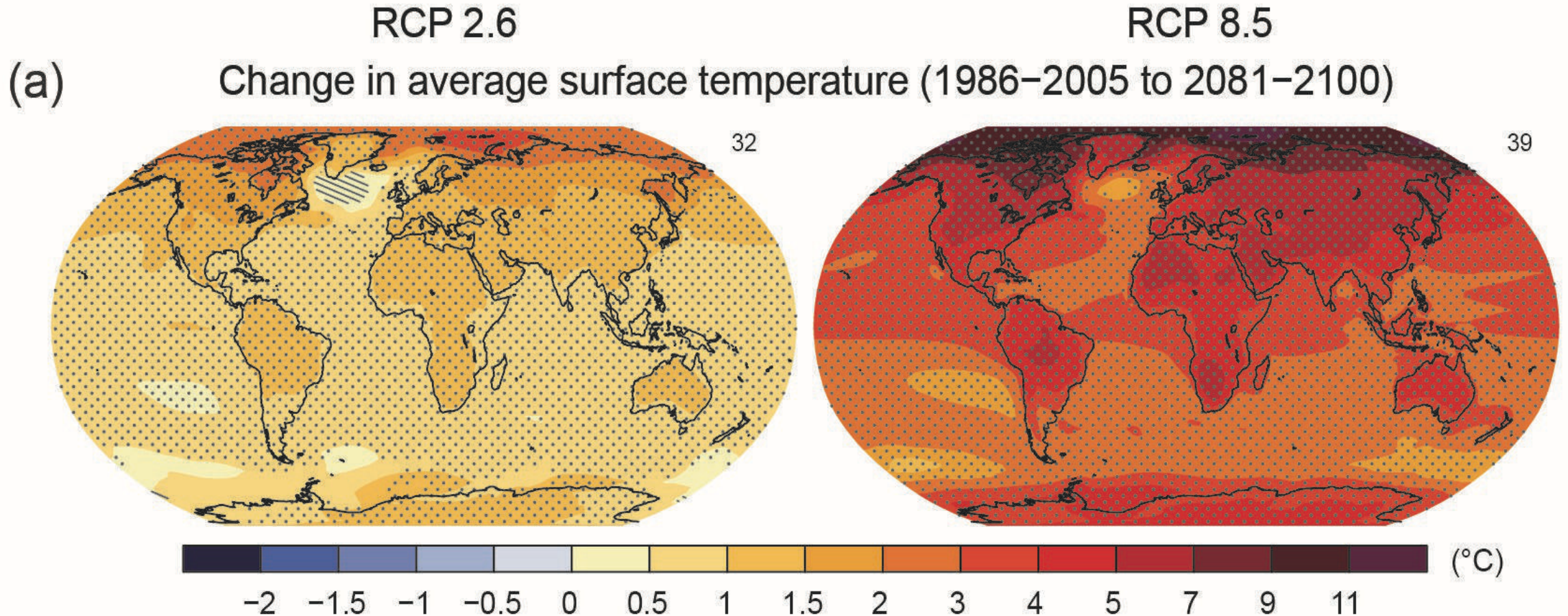
Source: AR5 2013



# Future: We Make the Choice

↓ RENEWABLE ENERGY EARTH

↓ FOSSIL FUEL EARTH



Source: AR5 2013

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## 2. The International Relations Reality

Or: How do you restrain a sovereign state?



- Climate change is shifting every condition and assumption that states rely on for their national security and sovereignty
- 4<sup>th</sup> order climate and security concerns:
  - LDC sense of injustice can compound OECD security threats
  - Nations can lose cooperation of allies, suffer reciprocity
  - Climate change can facilitate extremism
- Geoengineering is an increasingly probable option in an anarchic world, and there are no rules to govern its use

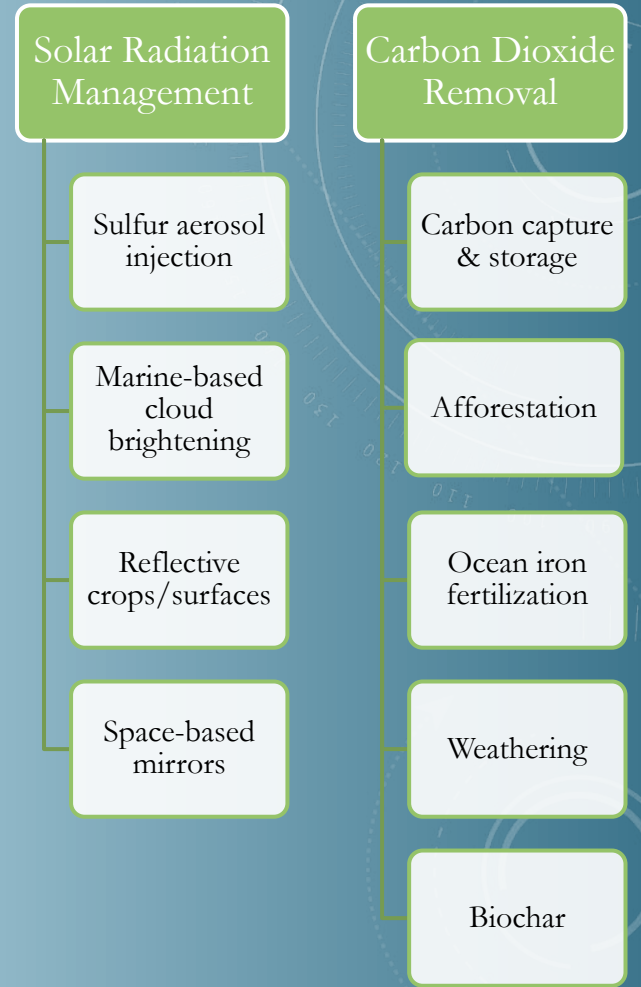
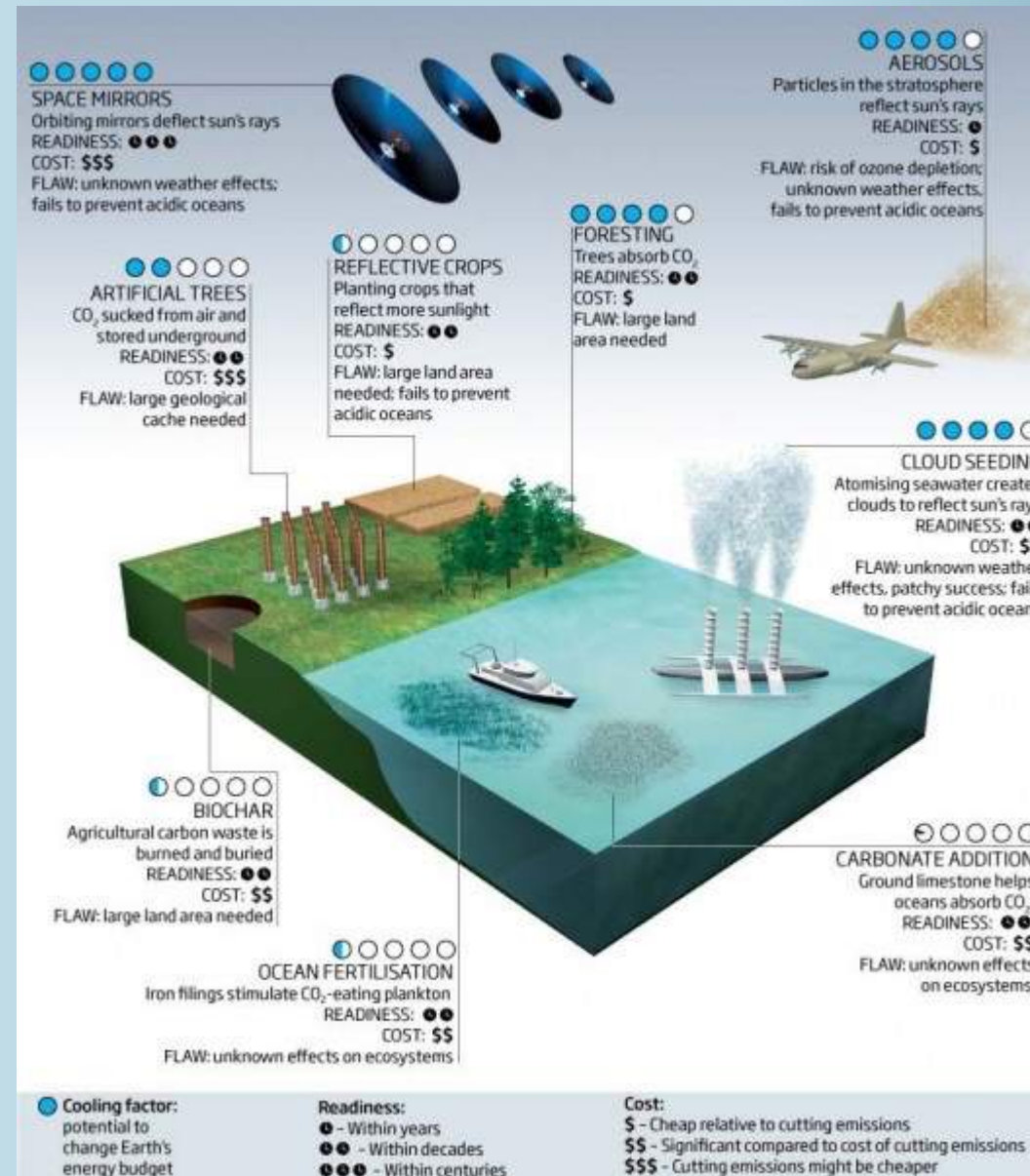


# What is Geoengineering?

“[A]n array of technologies that aim, through large-scale deliberate modification of the earth’s energy balance, to reduce temperatures and counteract anthropogenic climate change.”  
(Congressional Research Service 2011)

“The deliberate, large-scale intervention in the earth’s climate system in order to moderate global warming.”  
(Royal Society 2009)

“Technologies that deliberately reduce solar insolation or increase carbon sequestration from the atmosphere on a large scale that may affect biodiversity....”  
(Convention on Biological Diversity 2011)



# Commons-Based Geoengineering

## Solar Radiation Management

Sulfur aerosol injection



Marine-based cloud brightening



## Carbon Dioxide Removal

Ocean iron fertilization



- Must be deployed from the global commons: atmosphere or high seas
- Beyond 24nm = high seas per UNCLOS
- No clear determination re: atmosphere

Sensational headlines!

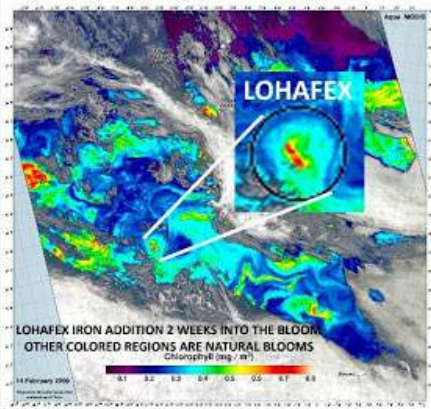
- “Planet hacking”
- “Snowpiercer-esque”
- “Mad scientist Scopex extinction scheme”
- “Bill Gates blots out the sun!”



# Recent / Current Experiments

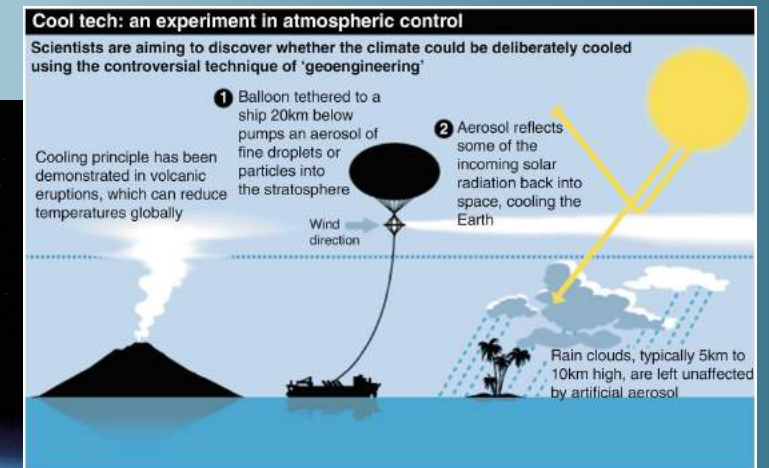
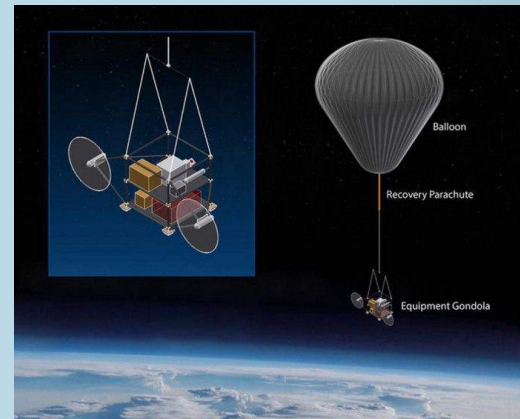
## Lohafex 2009 (OIF)

- Joint venture between Germany and India
- Carried out in a small patch of the Southern Atlantic, near Antarctica
- Results were inconclusive



## SCoPEx (SAI)

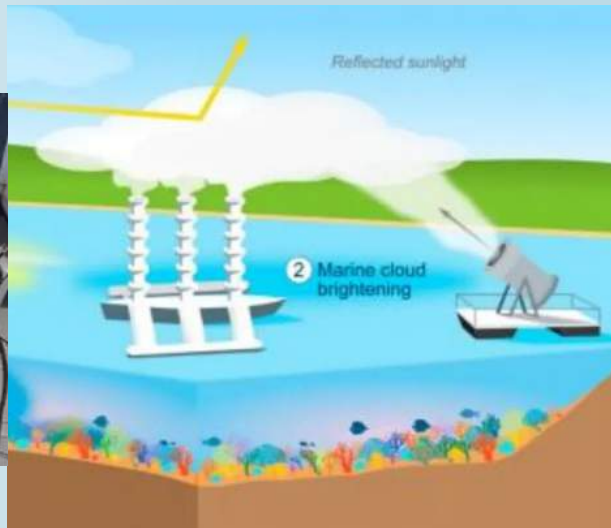
- **S**tratospheric **C**ontrolled **P**erturbation **E**xperiment
- Harvard University + several private donors
- Set to be carried out over Sweden, then cancelled



# Recent / Current Experiments

## Great Barrier Reef 2020 (MCB)

- Southern Cross University generated “mild fog” over the Reef
- Carried out off the eastern coast of Australia
- Initial results were positive, though only over small areas



## Tianhe, or Sky River

- Chinese government attempt at cloud seeding over the Tibetan plateau
- Not overtly a “geoengineering” project, but has the capacity to shift a huge amount of rainfall
- 10% increase





# Are there any restraints on CBG?

## International **environmental** law

1972 London Dumping Convention → iron seeding may be illegal, if classified as pollution

1979 LRTAP Convention + 8 Protocols → sulfur aerosols may be illegal, if contributes to acid rain

1982 UNCLOS → scientific or other activities carried out on the high seas must be for the benefit of all mankind

1992 Convention on Biological Diversity → more research on geoengineering must be carried out before deployment

## Laws of **war**

1977 ENMOD → “hostile” use of environmental modification techniques is prohibited

1977 Geneva Protocol I → “widespread, long-lasting, and severe” damage to the environment is prohibited

*N.B.:* Nothing in any law, convention, treaty, or custom prohibits a state from defending itself from a threat to its national security.

Look back to the first time we attempted to govern planet-changing technology...

### 3. The 1946 Baruch Plan

Or: What went wrong at the UN?



- Derived from the Acheson-Lilienthal Report, the Baruch Plan called for all atomic technology to be placed under UNAEC control
- 3 characteristics about atomic technology laid out in the Acheson-Lilienthal Report:
  - Powerful technology
  - No countermeasures, no defense
  - No secrecy
- **American position:** we won't give up our monopoly until every other country has agreed to restrictions (*not* what Oppenheimer et al recommended)
- **Soviet position:** we can't agree to restrictions until the United States gives up its monopoly
- Baruch Plan never adopted; UNAEC disbanded in 1952



# Same 3 characteristics also apply to CBG

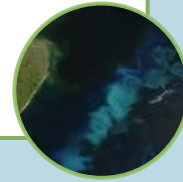
- Literally designed to alter the earth's climate
- Geoengineers replicating elemental geoscale forces

**Powerful technology**



- Technologies are dispersive in nature
- Only way to stop their deployment is with force

**No countermeasures, no defense**



- Logistics needed for deployment would be quite large
- Scientists from all over the world compete and collaborate

**No secrecy**



## Why is this a problem?

- Governments increasing study of, and planning for, geoengineering
- States have attempted to weaponize the weather before
- States can claim no hostile intent but still affect material livability in another state
- Arms races come about due to a perceived imbalance of power between/among states



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## 4. The Baruch Plan 2.0

Or: How do we avoid a climate arms race?

### Control of the Field

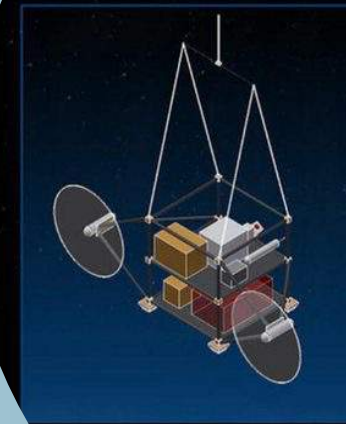
- Sole power to inspect and license all technology, conduct or oversee deployments, and lead the R&D field cooperatively with states, private firms, universities, etc.
- Agency serves as a clearinghouse for sanctioned experiments and orderly deployments
- No rogue actors

### Scientific Research

- Sole power to license research in the field
- Experimental designs, patents and materials would still be privately owned
- Research results and ongoing data monitoring would be publicly available at all times

### Dangerous and Non-Dangerous Activities

- Ability to determine which experiments are working and which are not
- Critically important that good > harm





## Future Questions:



- How accurate are these CBG technologies?
- What is the national will to use them? To keep using them?
- Can they realistically be weaponized?
- Who negotiates this agreement? Multilateral? Mini-lateral?
- How do we define collateral damage? Elemental forces? "Widespread, long-lasting and severe"?
- Who profits from geoengineering?
- Who speaks for those who are defenseless?
- How do we alter the functional meaning of sovereignty to take into account the ecological reality of the planet?

Climate change and geoengineering expose the limitations of traditional political realism as the theory underpinning modern IR.

Realism's blind spot is that humanity's relationship with the natural world exists in a steady state.

All of our security calculations take place against the static backdrop of a stable climate.

## Ecological Realism

The realization that every nation's core national interest and primary strategic objective is the preservation and regeneration of the natural environment.





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# Thank You!

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"Actually, the biggest threat facing us is climate change.  
Try this signal instead."