THE CLIMATE CATASTROPHE

AND THE MĀLAMA HONUA WORLDWIDE VOYAGE OF THE HŌKŪLE`A

How Can We Take Care of the Earth?

A DEEPER LOOK INTO THE SCIENCE, PHILOSOPHY, AND POLITICS OF CLIMATE CHANGE

A Presentation by

TIMOTHY J FREEMAN

Assistant Professor of Philosophy

University of Hawai'i at Hilo

"She is more than a voyaging canoe—she represents the common desire shared by the people of Hawaii, the Pacific, and the World to protect our most cherished values and places from disappearing."

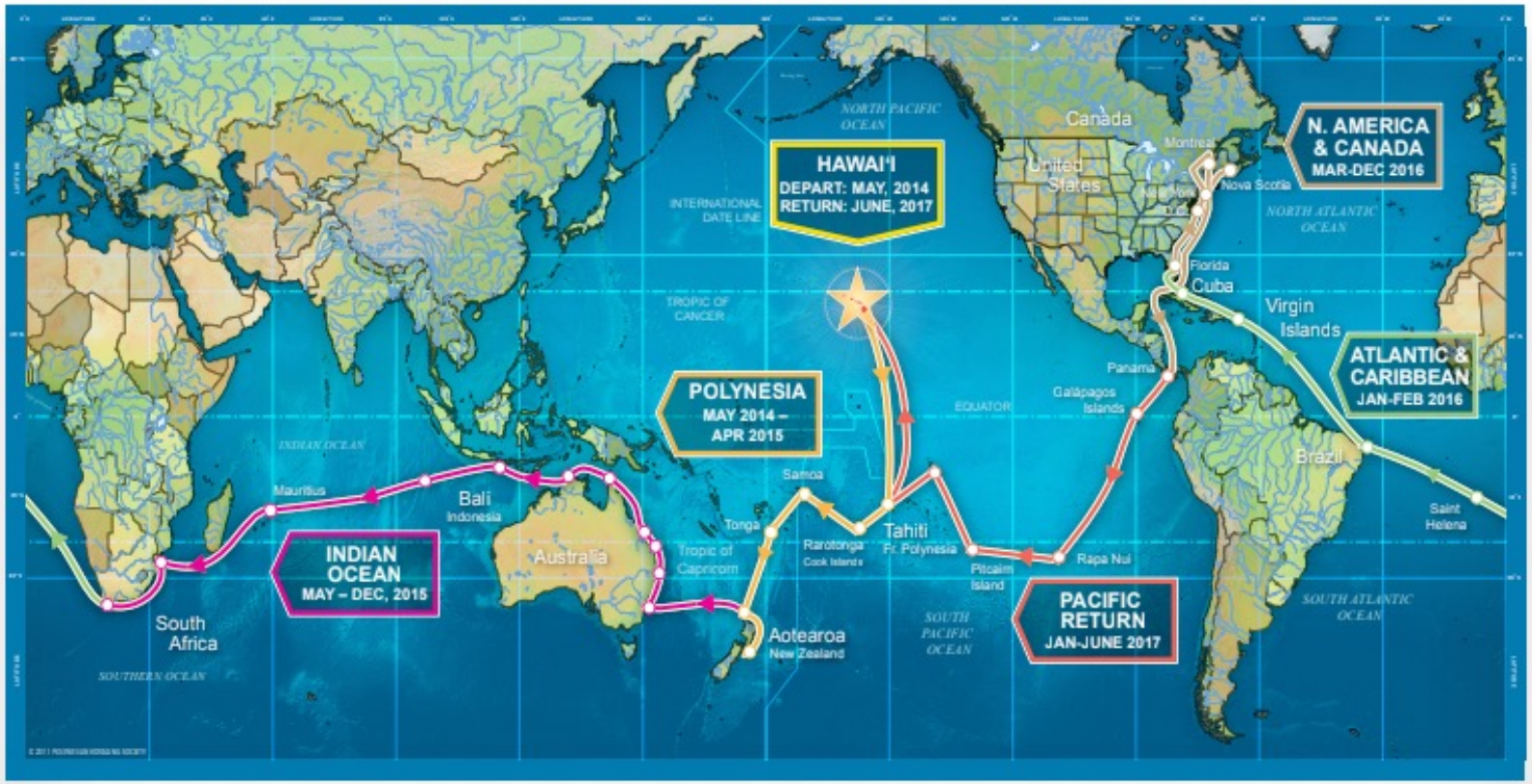
Polynesian Voyaging Society

http://www.hokulea.com/voyages/our-story/

Hōkūleʻa © Herb Kāne

MĀLAMA HONUA
WORLDWIDE VOYAGE

– SPONSORED BY HAWAIIAN AIRLINES –



WWW.HOKULEA.COM | @HOKULEAWWV

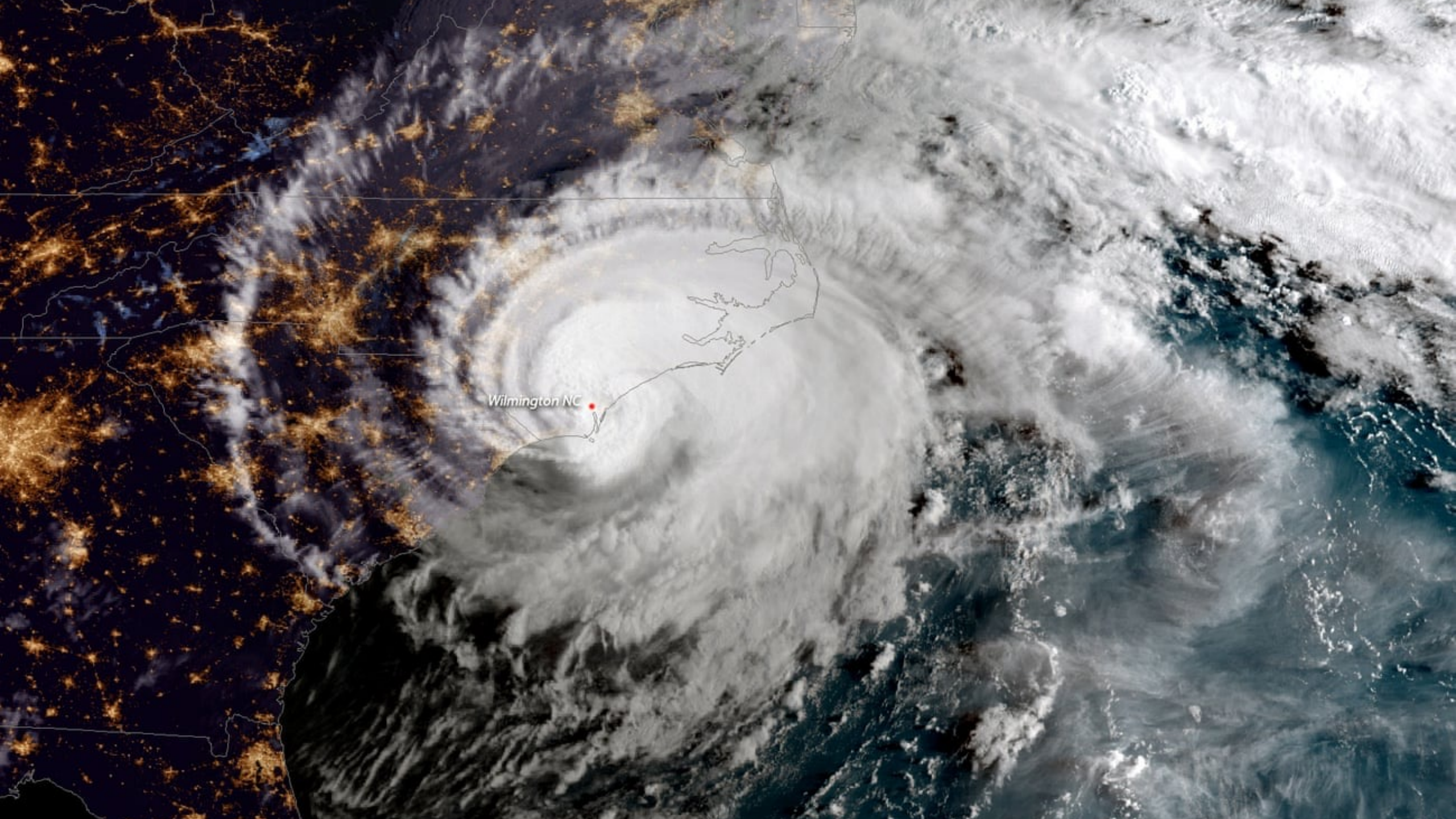
The Hawaiian name for this voyage, *Mālama Honua*, means "to care for our Earth." Living on an island chain teaches us that our natural world is a gift with limits and that we must carefully steward this gift if we are to survive together. As we work to protect cultural and environmental resources for our children's future, our Pacific voyaging traditions teach us to venture beyond the horizon to connect and learn with others. The Worldwide Voyage is a means by which we now engage all of Island Earth—bridging traditional and new technologies to live sustainably, while sharing, learning, creating global relationships, and discovering the wonders of this precious place we all call home.

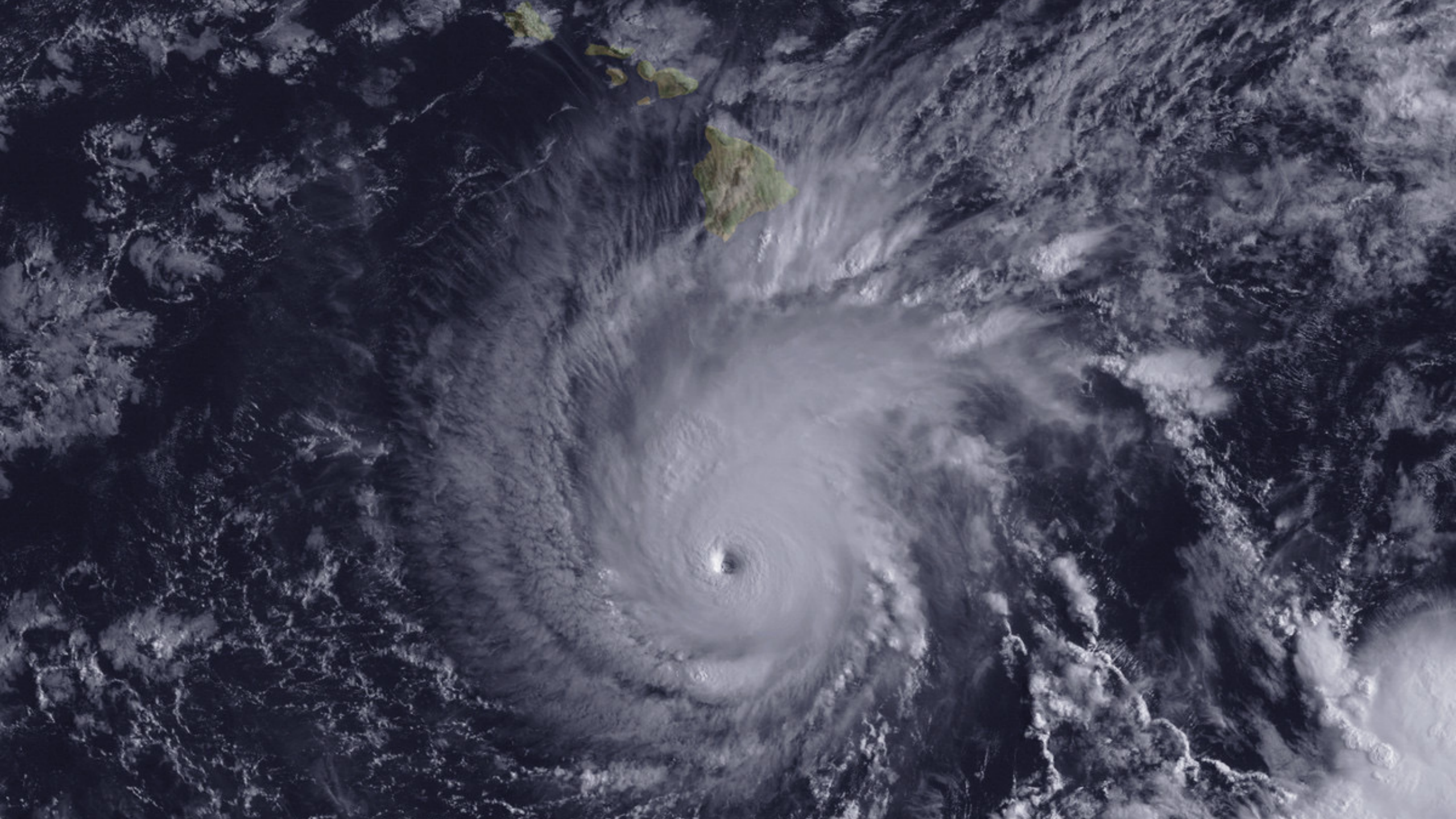
Polynesian Voyaging Society

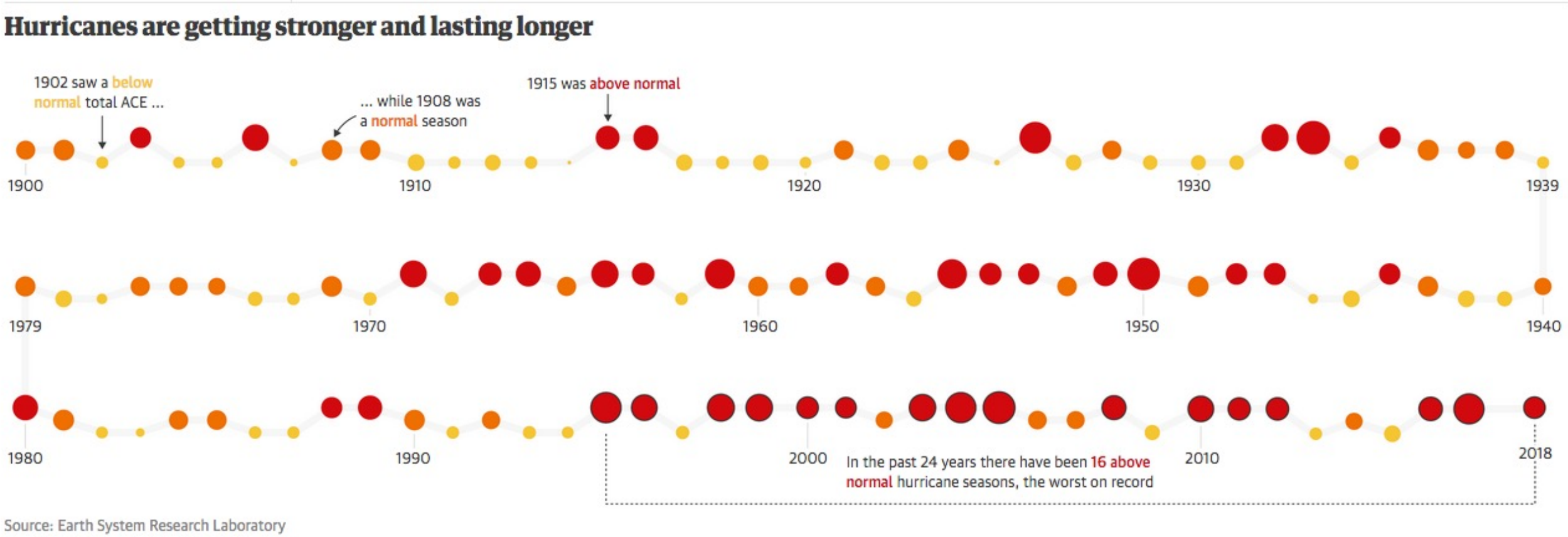
http://www.hokulea.com/worldwide-voyage/

this
precious
place
we
call
home

https://www.popsci.com/best-images-earth-from-space#page-2


Wilmington NC

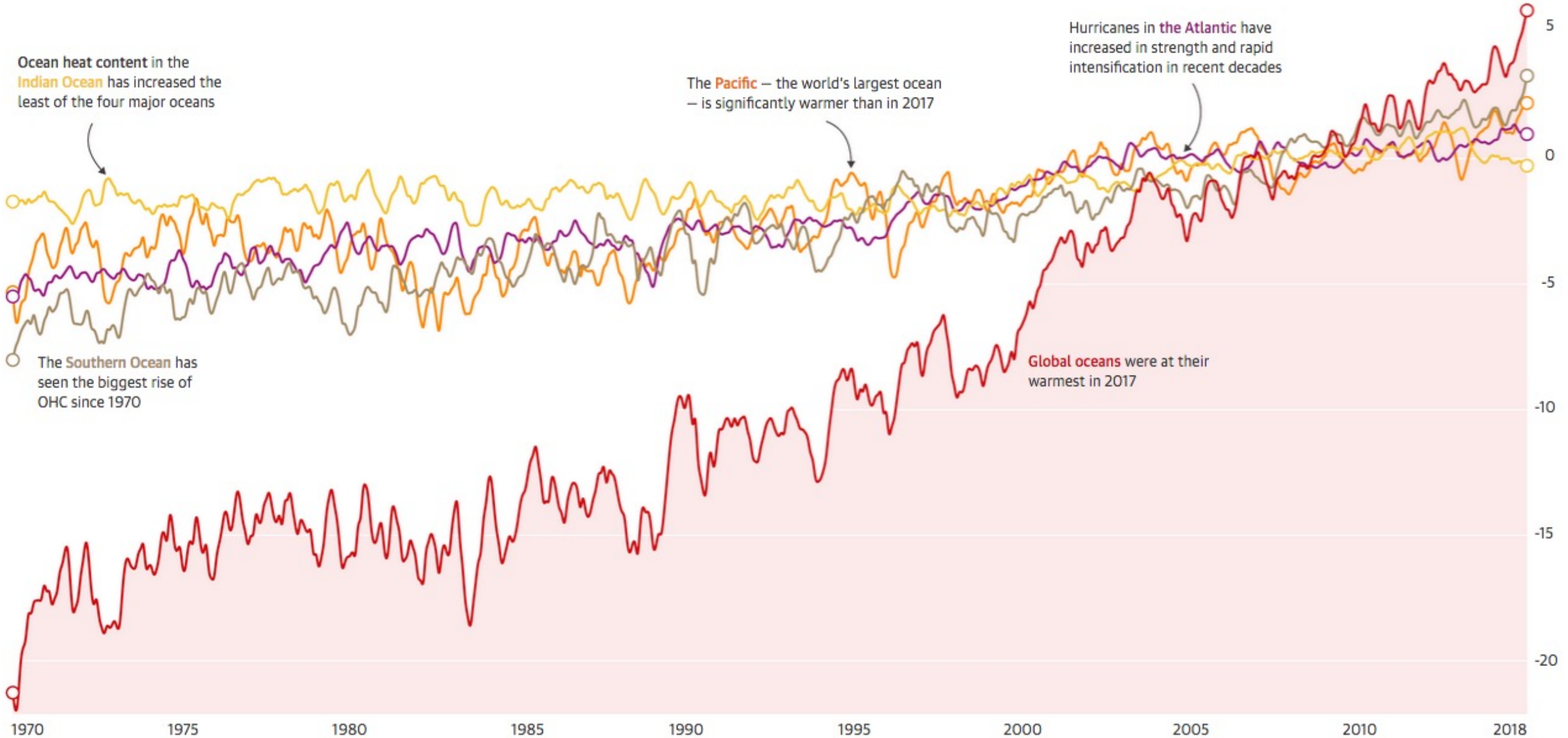




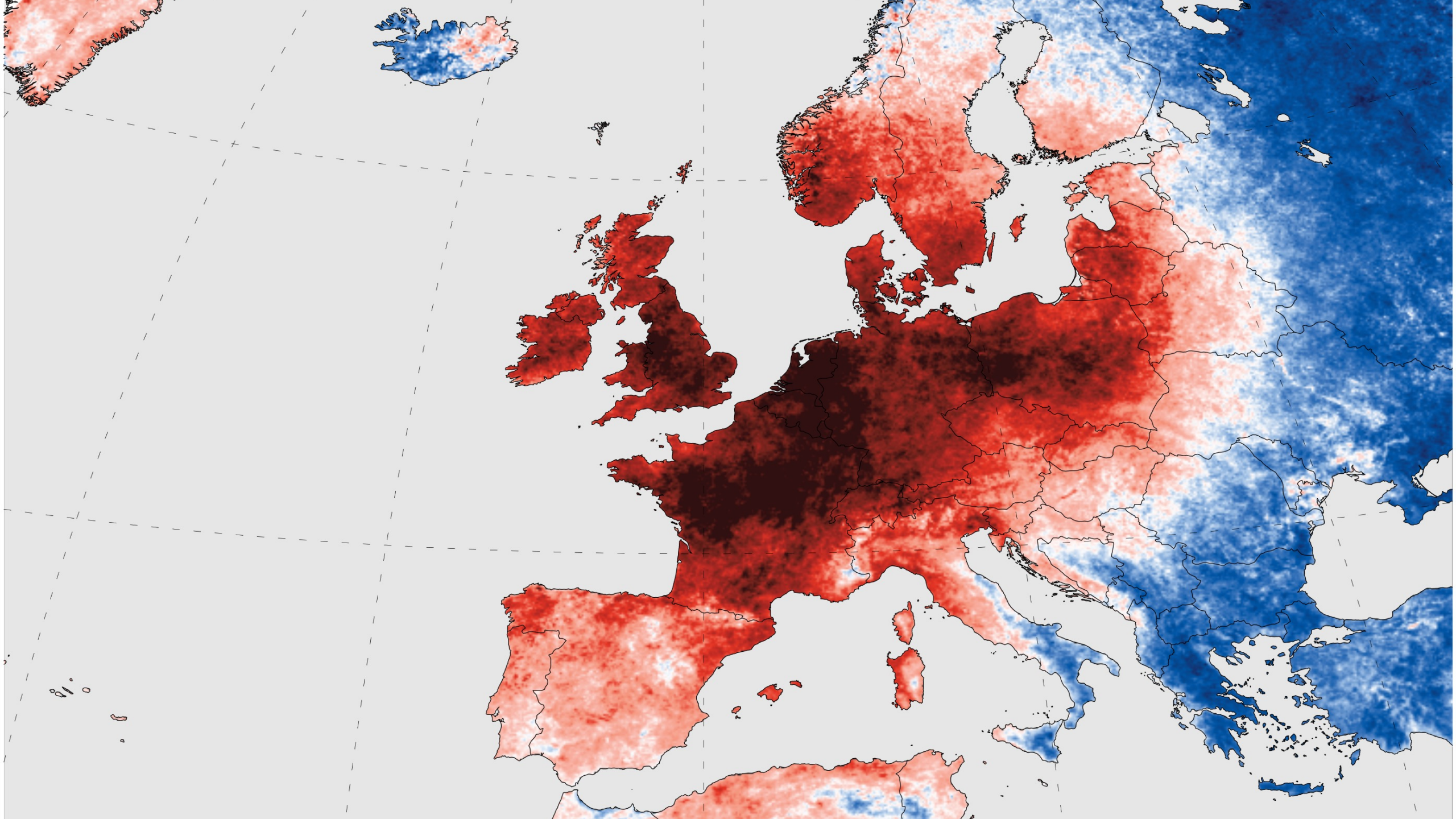
Hurricane seasons from 1900-2018

The data shows that Hurricanes are getting stronger and lasting longer.

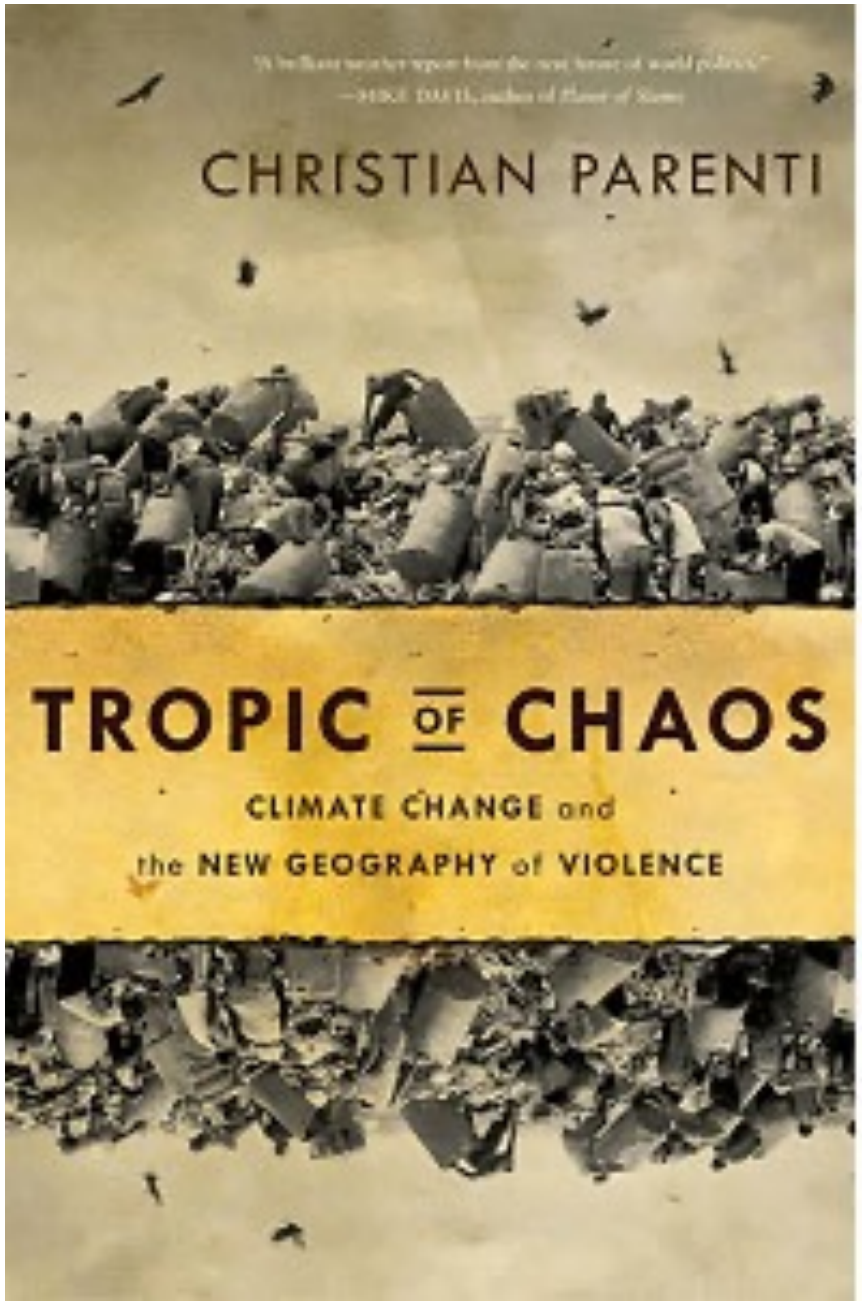
Ocean energy is rapidly increasing

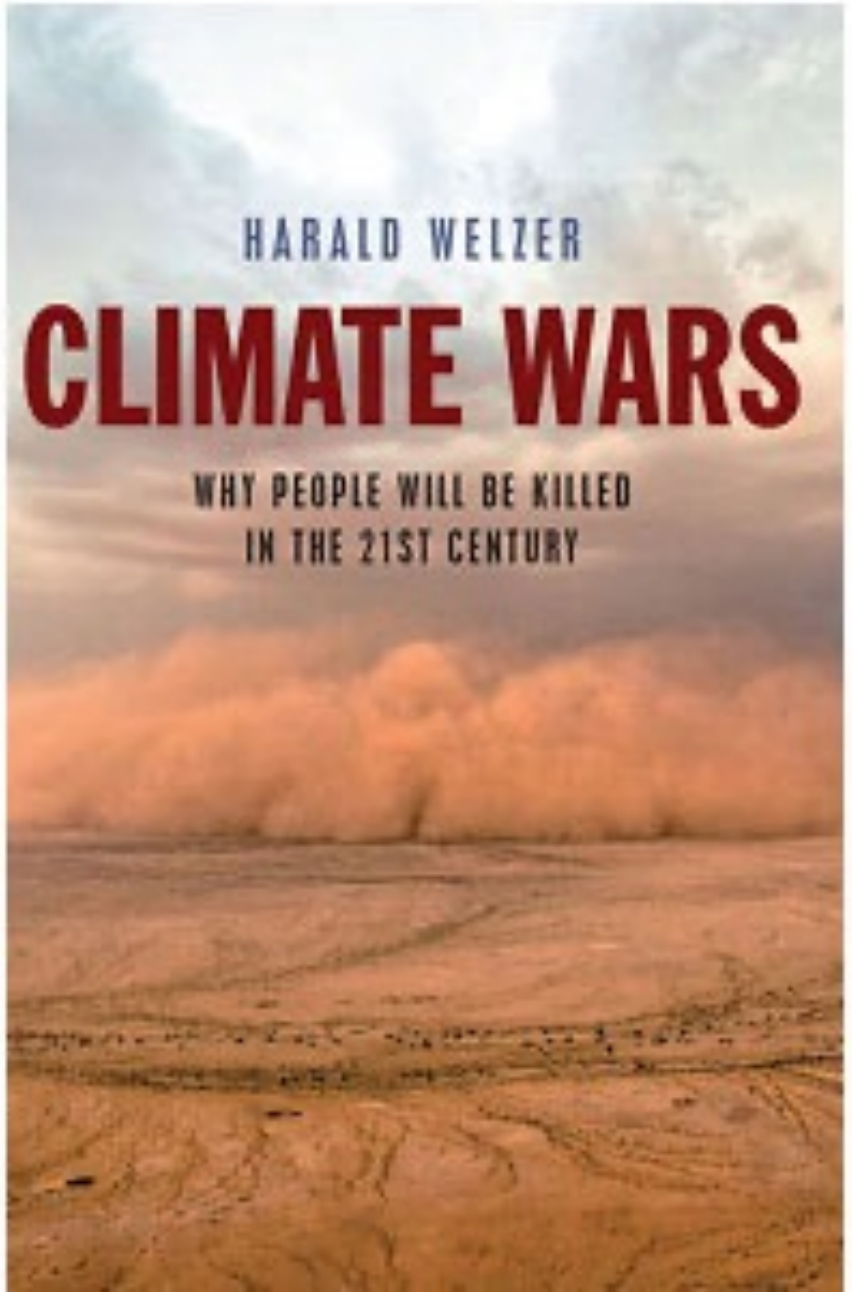


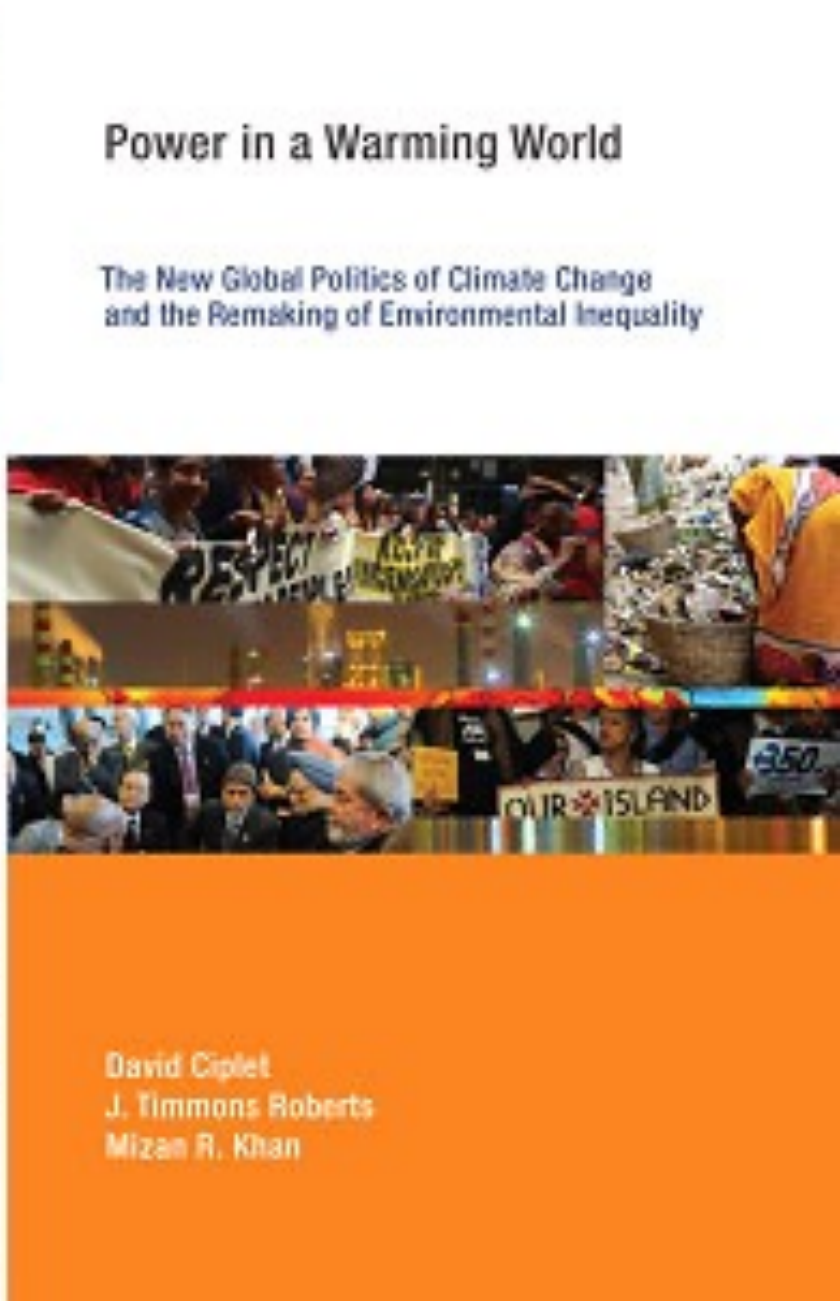
Source: Institute of Atmospheric Physics, Chinese Academy of Sciences. Notes: Ocean Heat Content is based on anomaly (10^22 Joules)




THIS IS
CLIMATE CHANGE
FAMINE


CHRISTIAN PARENTI
TROPIC OF CHAOS
CLIMATE CHANGE and
the NEW GEOGRAPHY of VIOLENCE


HARALD WELZER
CLIMATE WARS
WHY PEOPLE WILL BE KILLED
IN THE 21ST CENTURY


Power in a Warming World
The New Global Politics of Climate Change
and the Remaking of Environmental Inequality
David Ciplet
J. Timmons Roberts
Mizan R. Khan

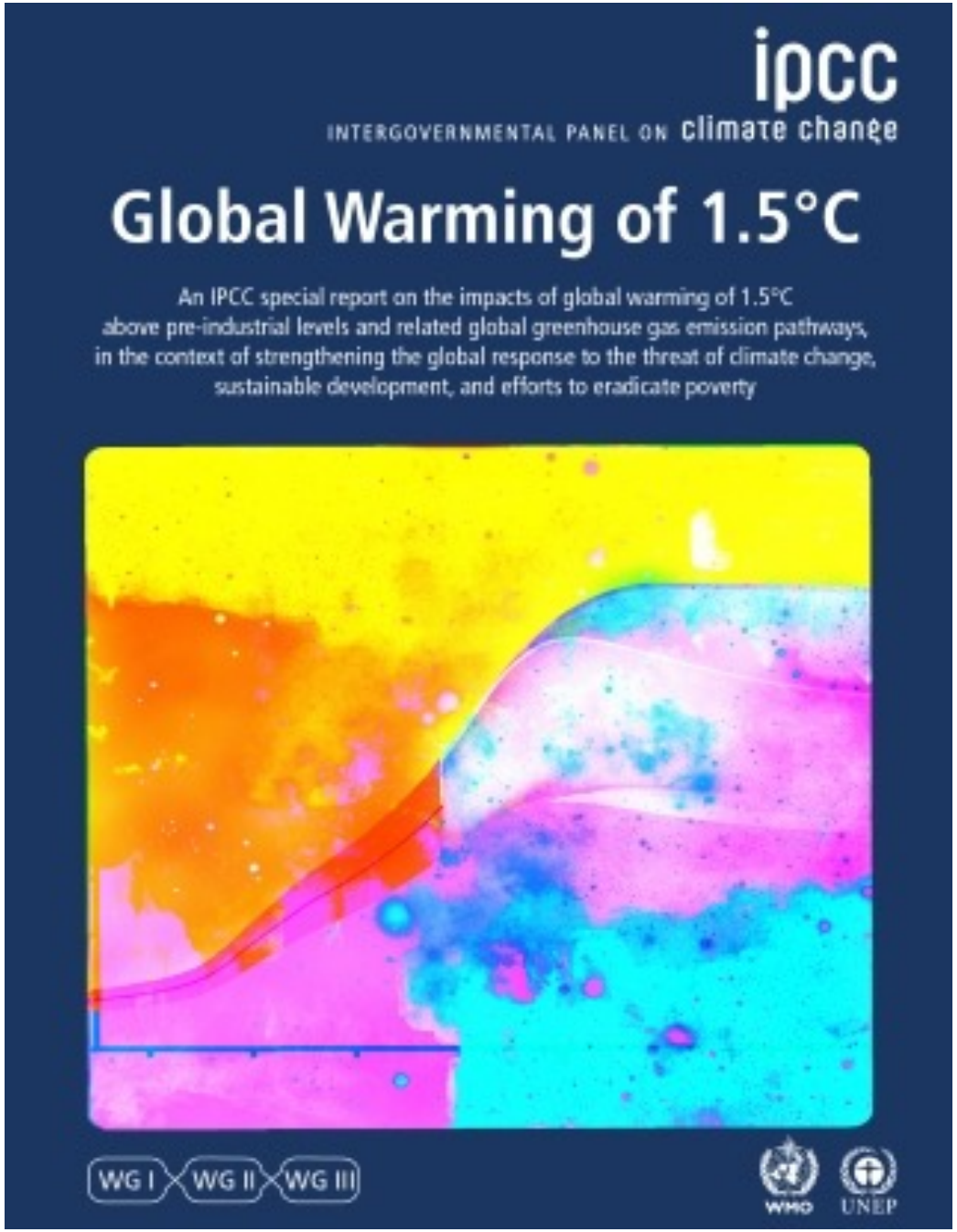
The New York Times

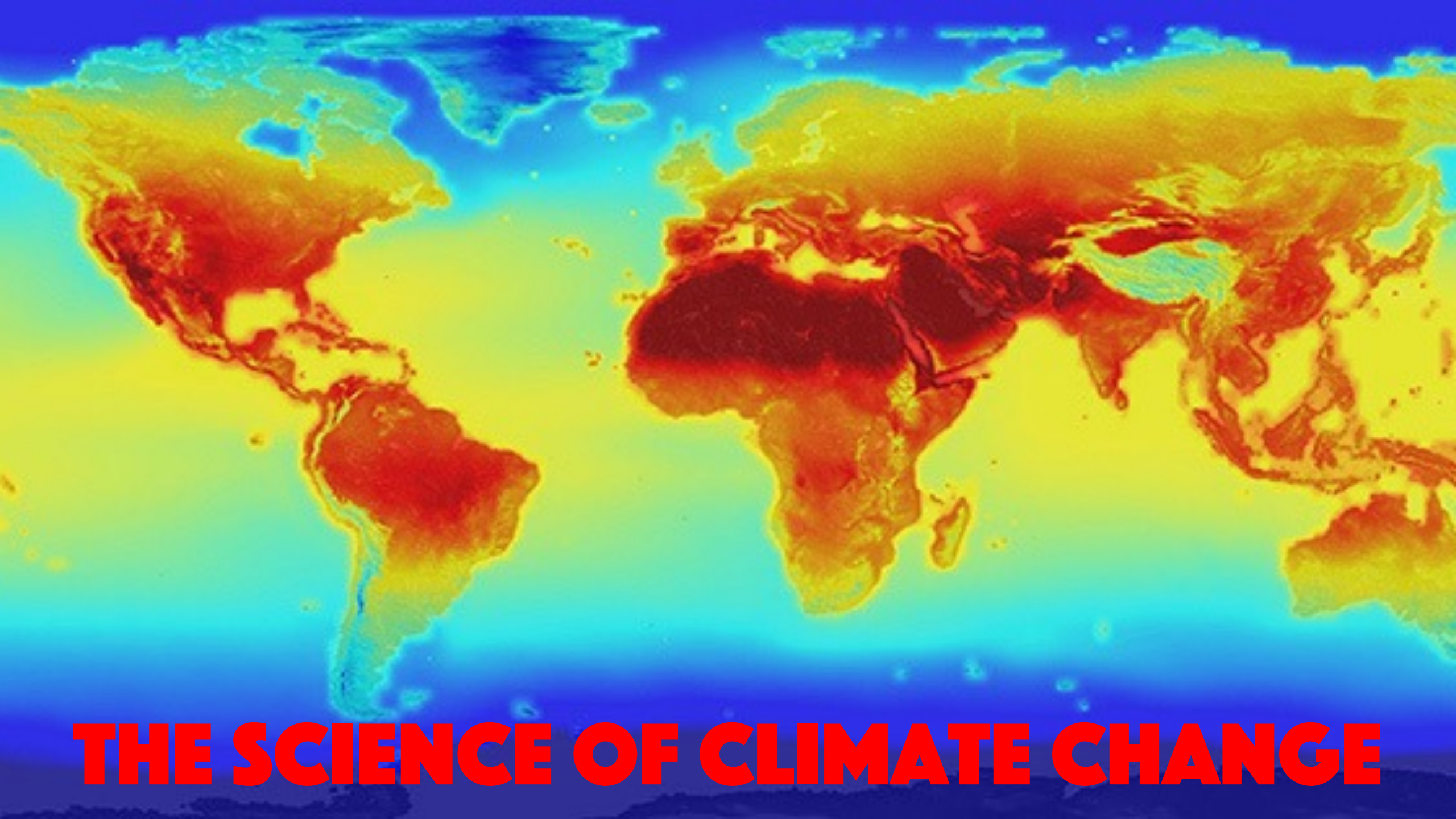
Major Climate Report Describes a Strong Risk of Crisis as Early as 2040

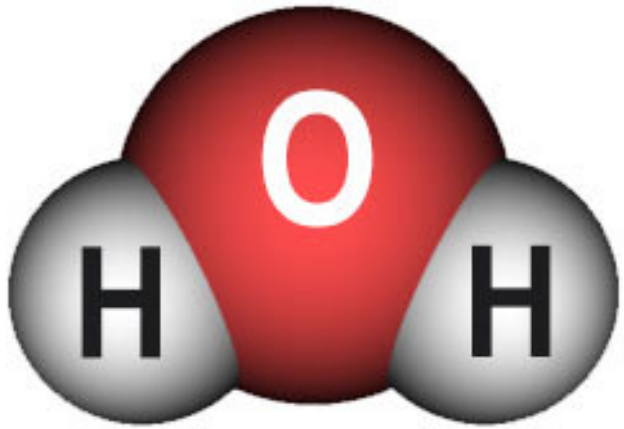
INCHEON, South Korea — A landmark report from the United Nations' scientific panel on climate change paints a far more dire picture of the immediate consequences of climate change than previously thought and says that avoiding the damage requires transforming the world economy at a speed and scale that has "no documented historic precedent."

The report, issued on Monday by the Intergovernmental Panel on Climate Change, a group of scientists convened by the United Nations to guide world leaders, describes a world of worsening food shortages and wildfires, and a mass die-off of coral reefs as soon as 2040 — a period well within the lifetime of much of the global population.

The report "is quite a shock, and quite concerning," said Bill Hare, an author of previous I.P.C.C. reports and a physicist with Climate Analytics, a nonprofit organization. "We were not aware of this just a few years ago." The report was the first to be commissioned by world leaders under the Paris agreement, the 2015 pact by nations to fight global warming.

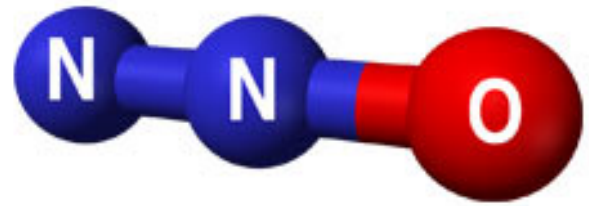


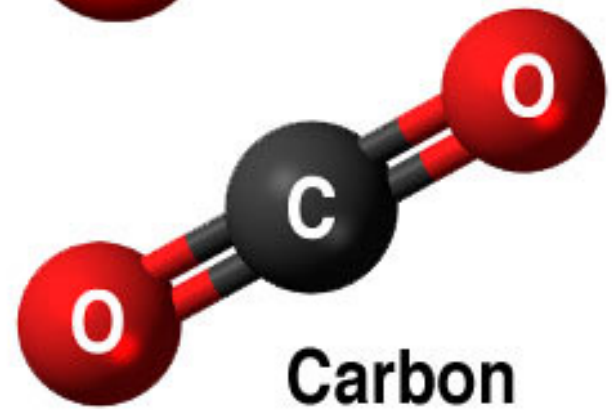

THE SCIENCE OF CLIMATE CHANGE



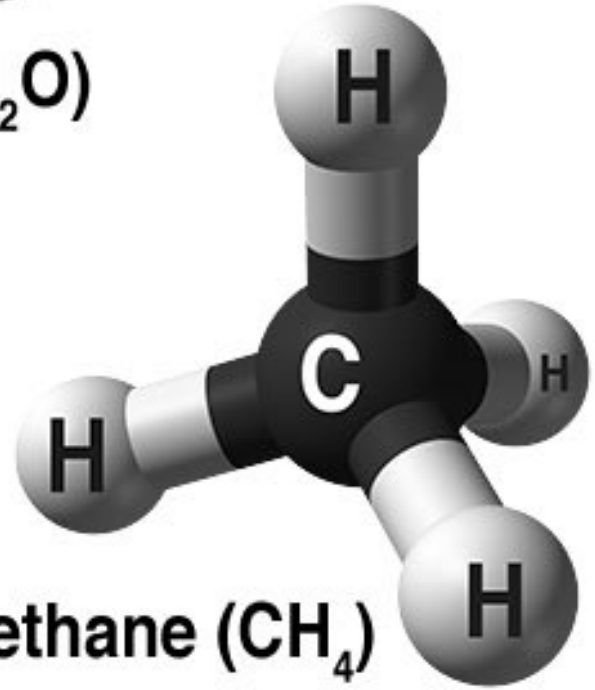
Water vapor (H_2O)

Nitrous oxide (N_2O)

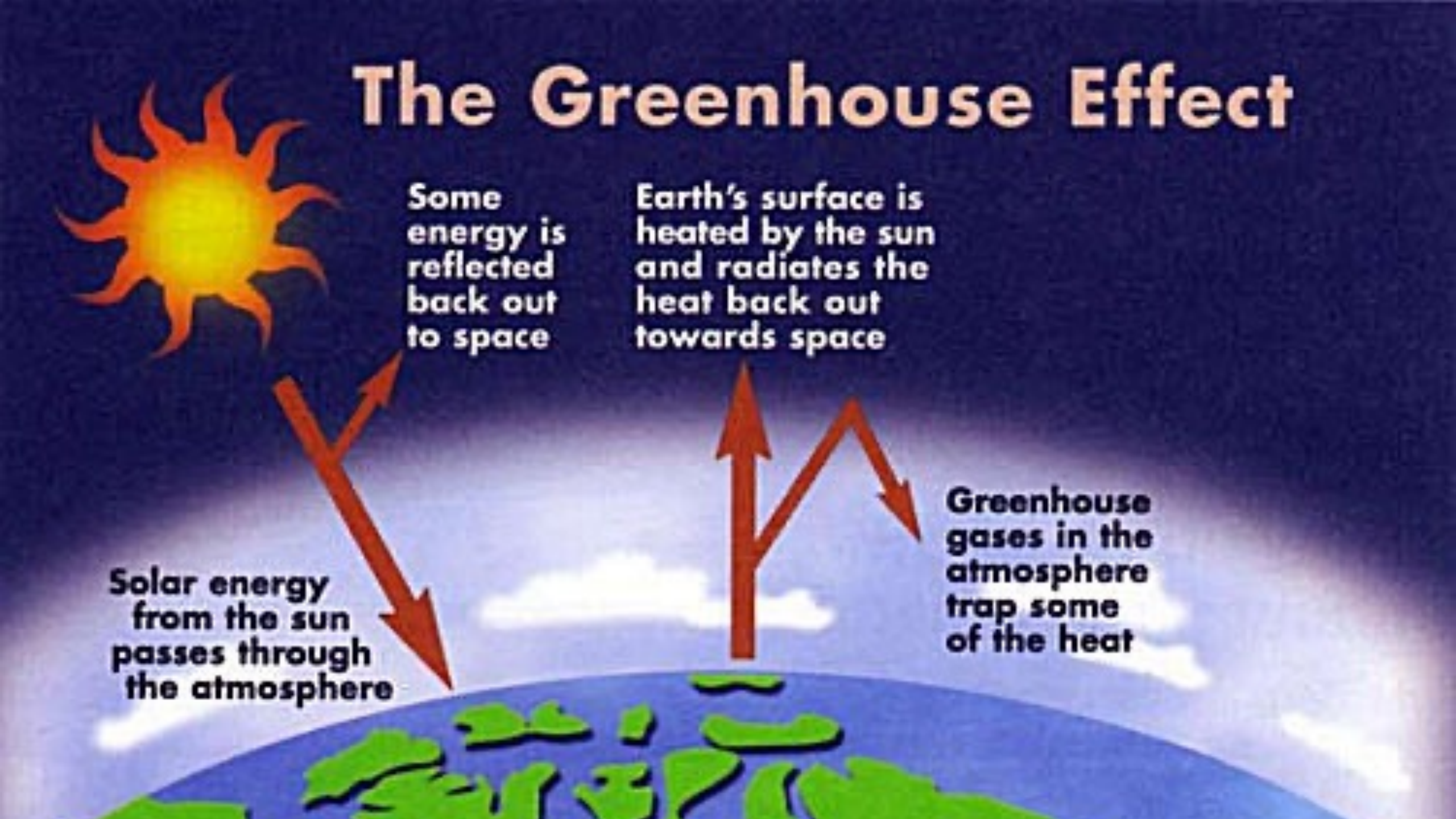


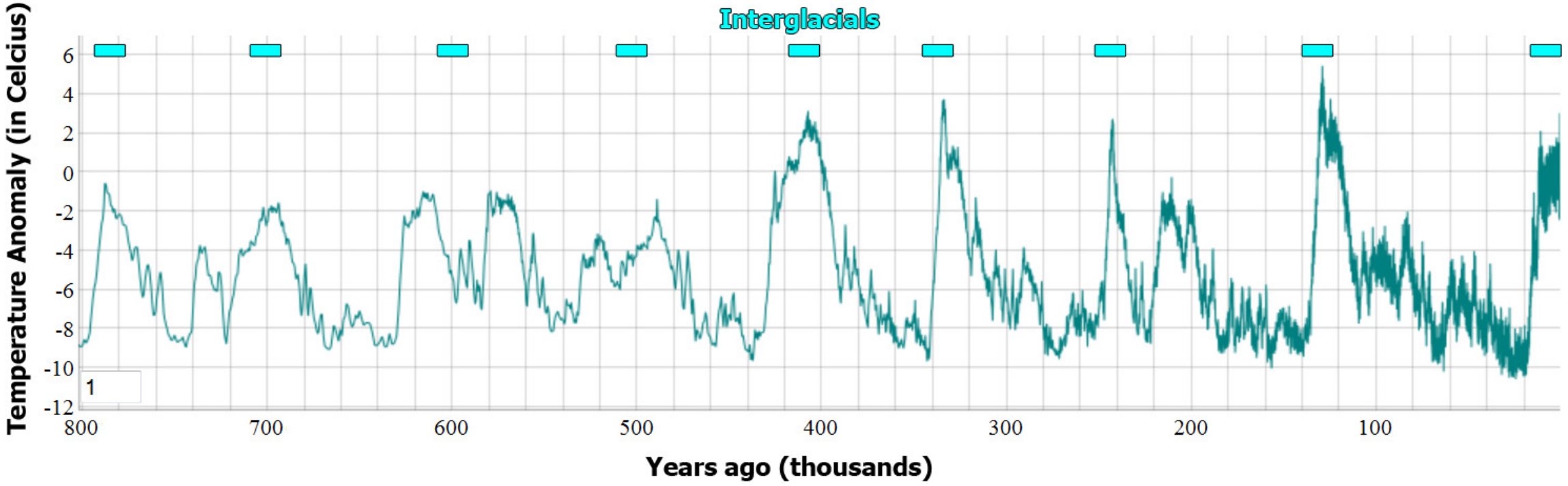


Carbon dioxide (CO_2)

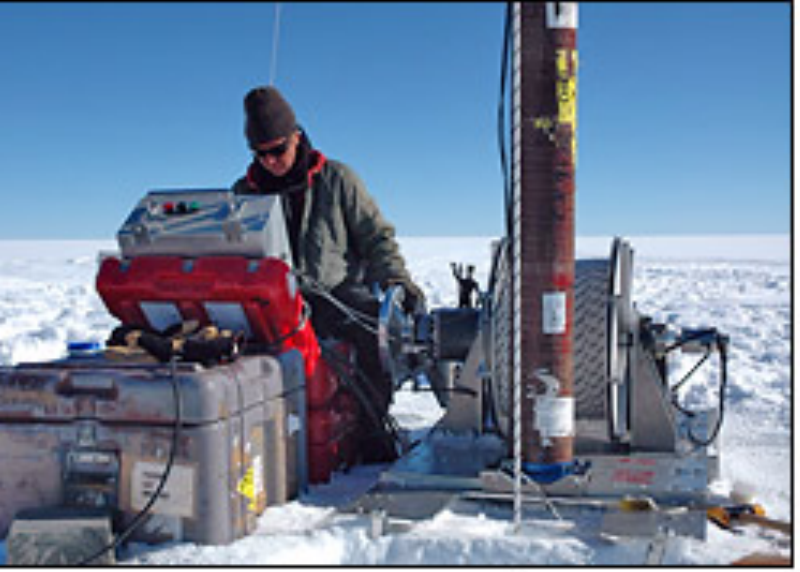


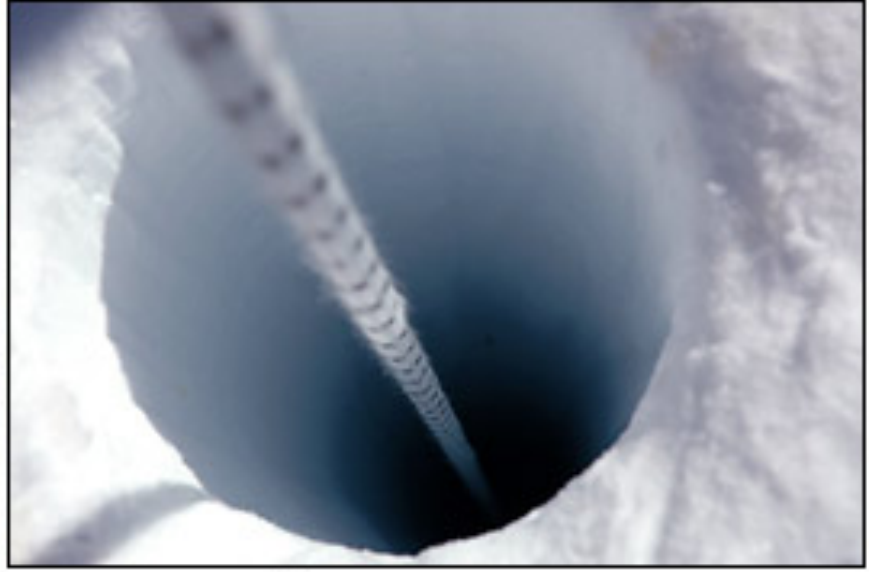
Methane (CH_4)

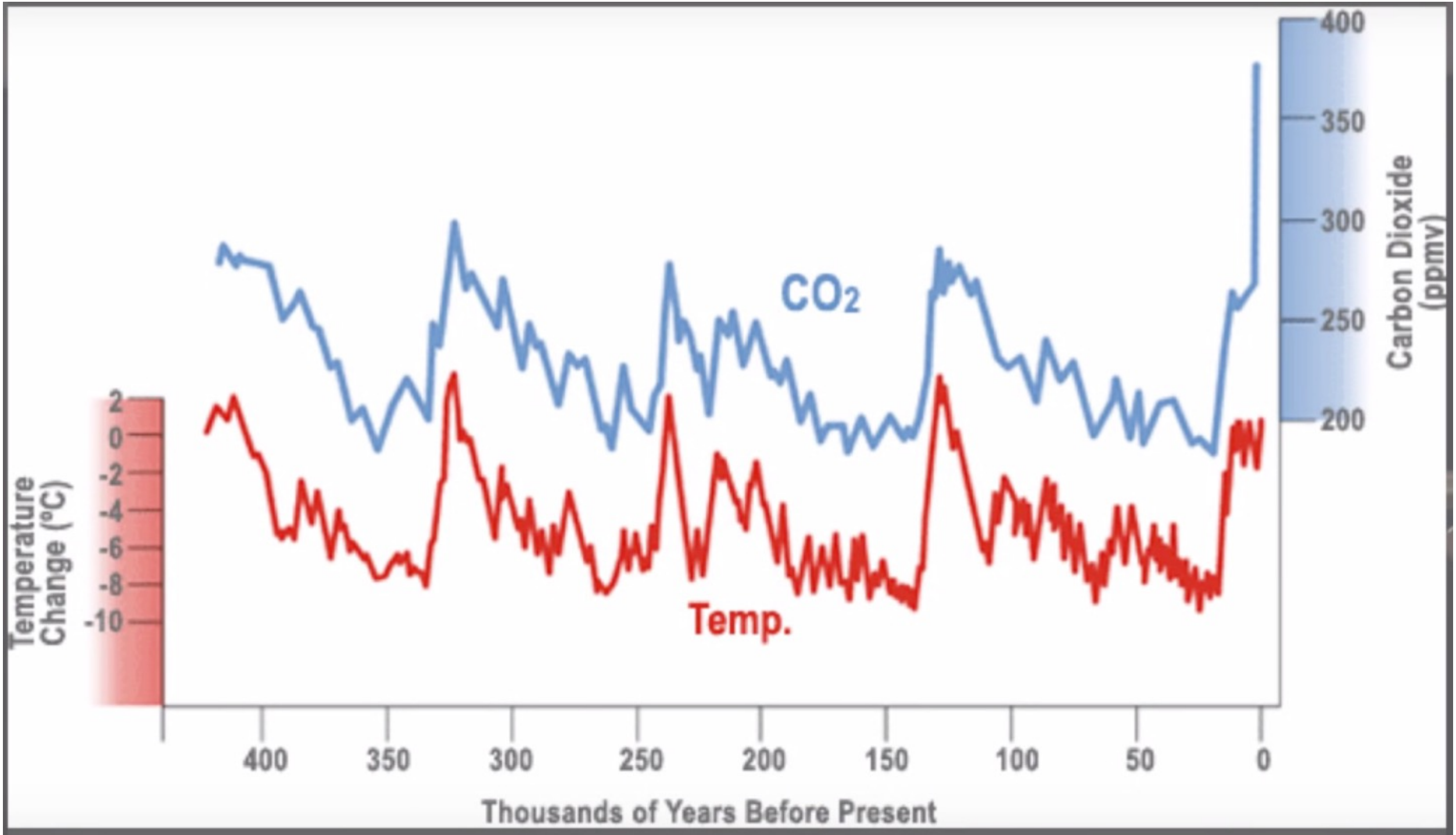

The Greenhouse Effect
Some energy is reflected back out to space
Earth's surface is heated by the sun and radiates the heat back out towards space
Greenhouse gases in the atmosphere trap some of the heat
Solar energy from the sun passes through the atmosphere

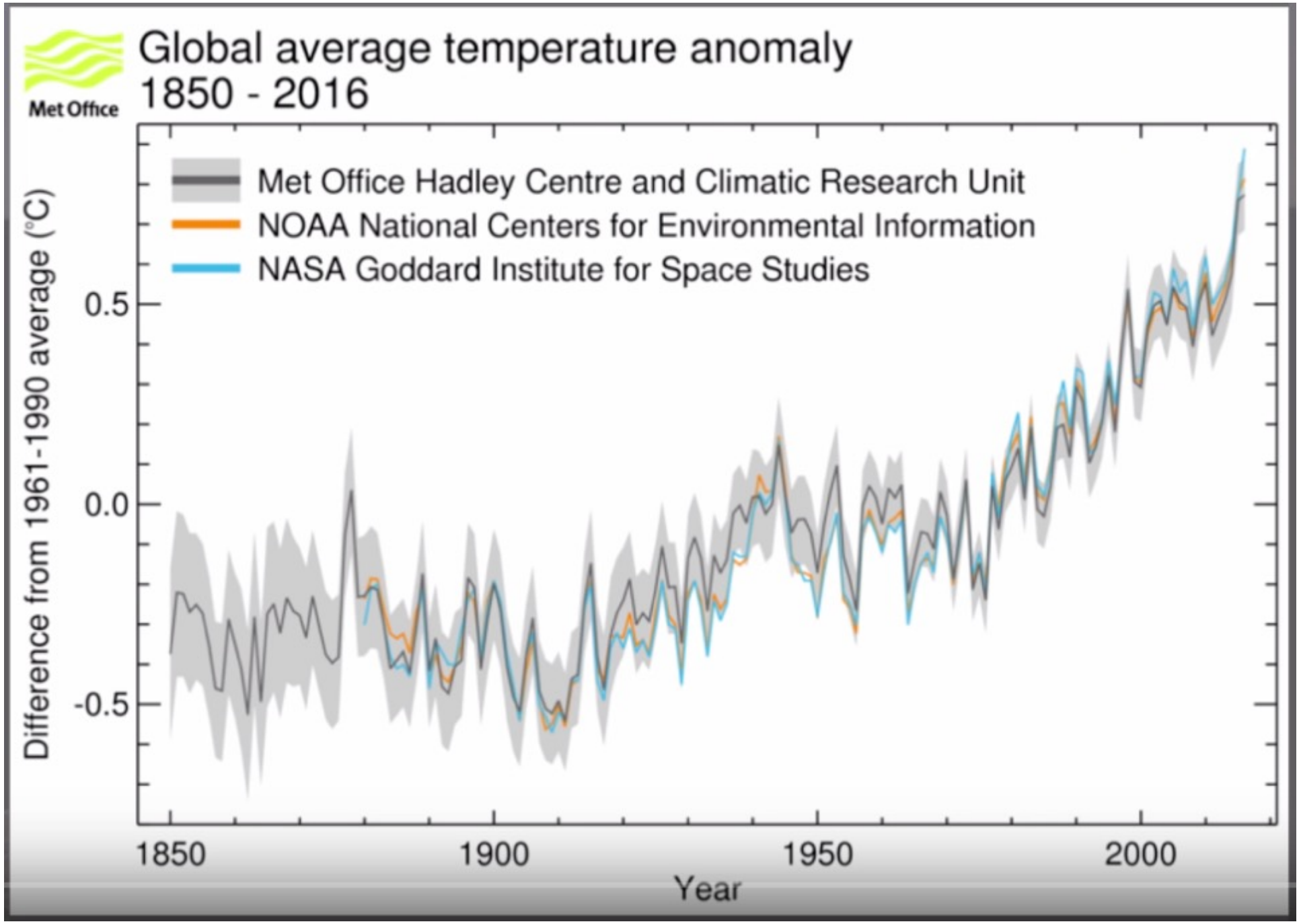


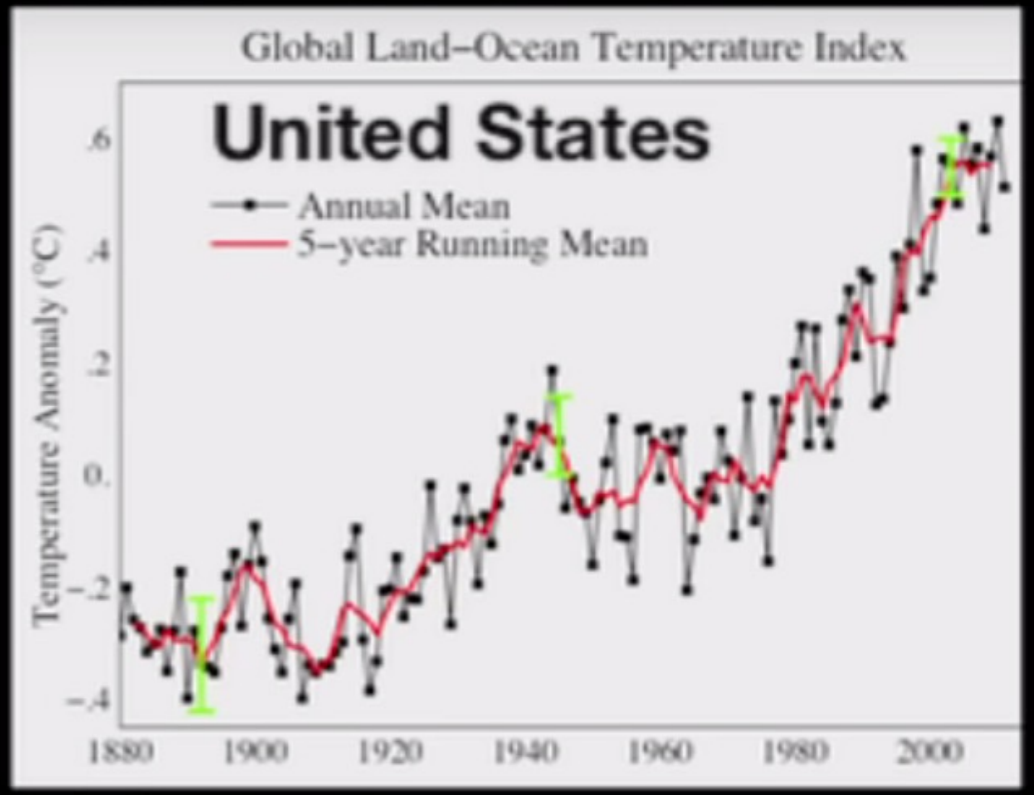
Oscillation of Global Temperature over 800,000 Years

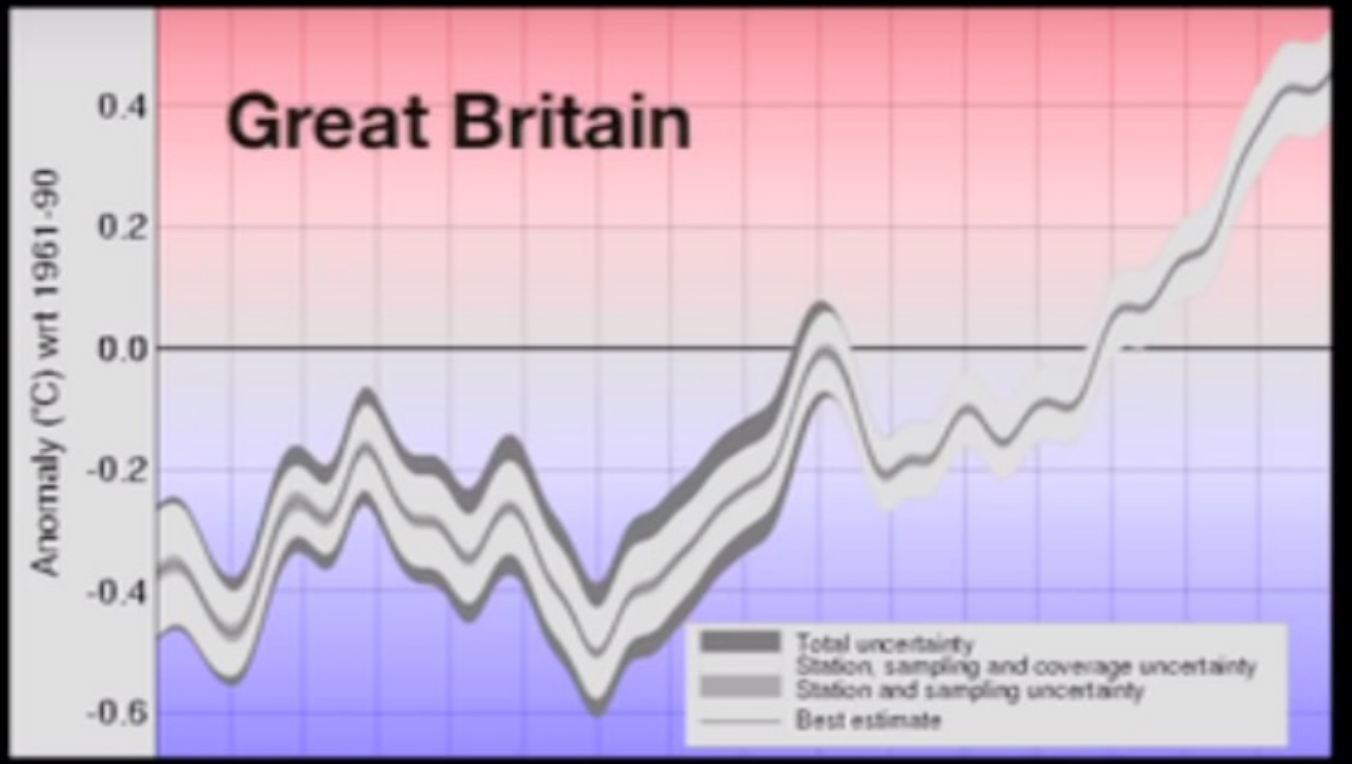


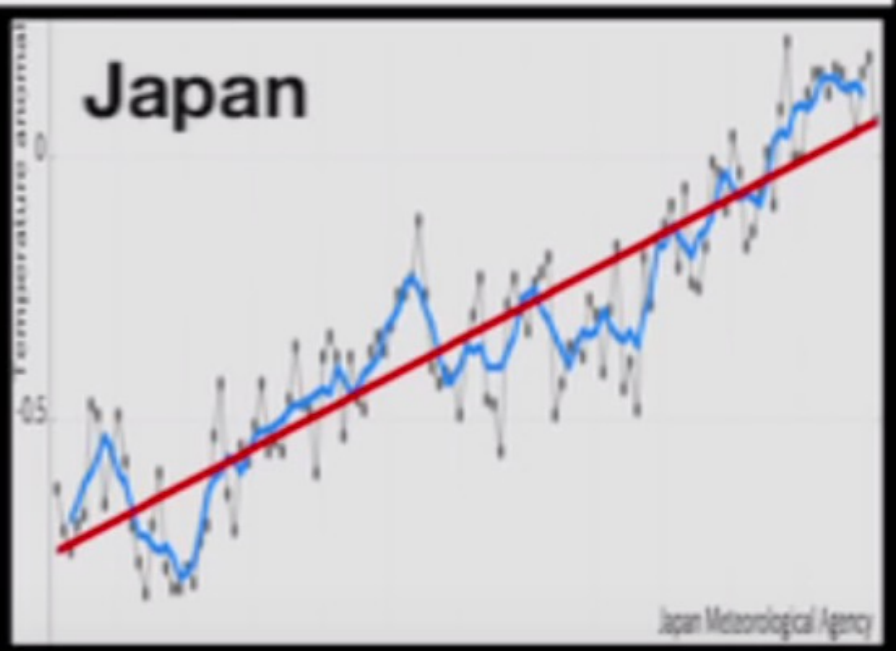



CO_2
Temp.
Temperature Change (°C)
2
0
-2
-4
-6
-8
-10
Carbon Dioxide (ppmv)
400
350
300
250
200
400
350
300
250
200
150
100
50
0
Thousands of Years Before Present

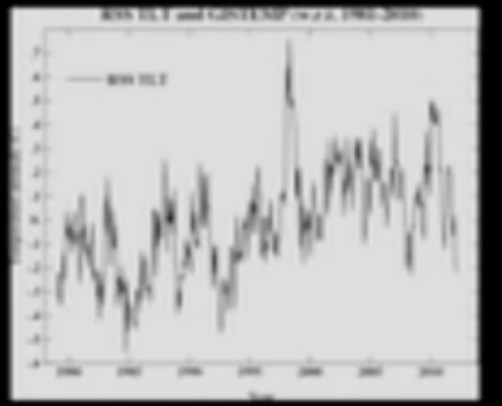

Met Office
Global average temperature anomaly
1850 - 2016
Met Office Hadley Centre and Climatic Research Unit
NOAA National Centers for Environmental Information
NASA Goddard Institute for Space Studies
Difference from 1961-1990 average (°C)
0.5
0.0
-0.5
1850
1900
1950
2000
Year







Satellite Data
Since 1979



NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

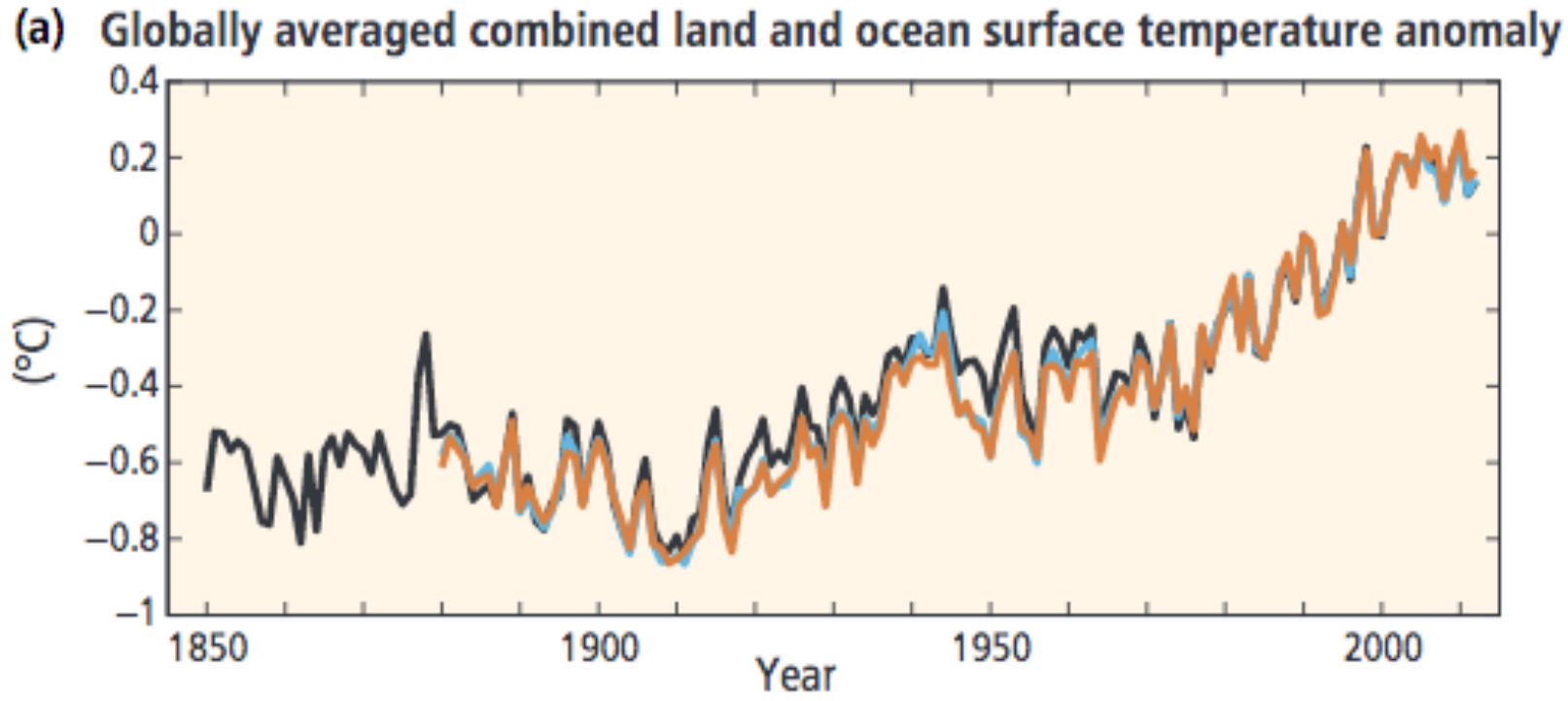
Home | Climate Information | Data Access | Customer Support | Contact | About

Home > Climate Monitoring > State of the Climate > Global Climate Report

Global Climate Report - September 2018

With global records dating back to 1880, the September 2018 global temperature across the world's land and ocean surfaces was 0.78°C (1.40°F) above the 20th century average of 15.0°C (59.0°F)—tying with 2017 as the fourth highest September temperature in the 139-year record. The ten warmest September global land and ocean surface temperatures have occurred since 2003, with the last five years (2014–2018) comprising the five warmest Septembers on record. September 2015 is the record warmest September at +0.93°C (+1.67°F). September 2018 also marks the 42nd consecutive September and the 405th consecutive month with temperatures, at least nominally, above the 20th century average.

NOAA National Centers for Environmental Information, State of the Climate: Global Climate Report for September 2018, published online October 2018, retrieved on November 15, 2018 from https://www.ncdc.noaa.gov/sotc/global/201809.

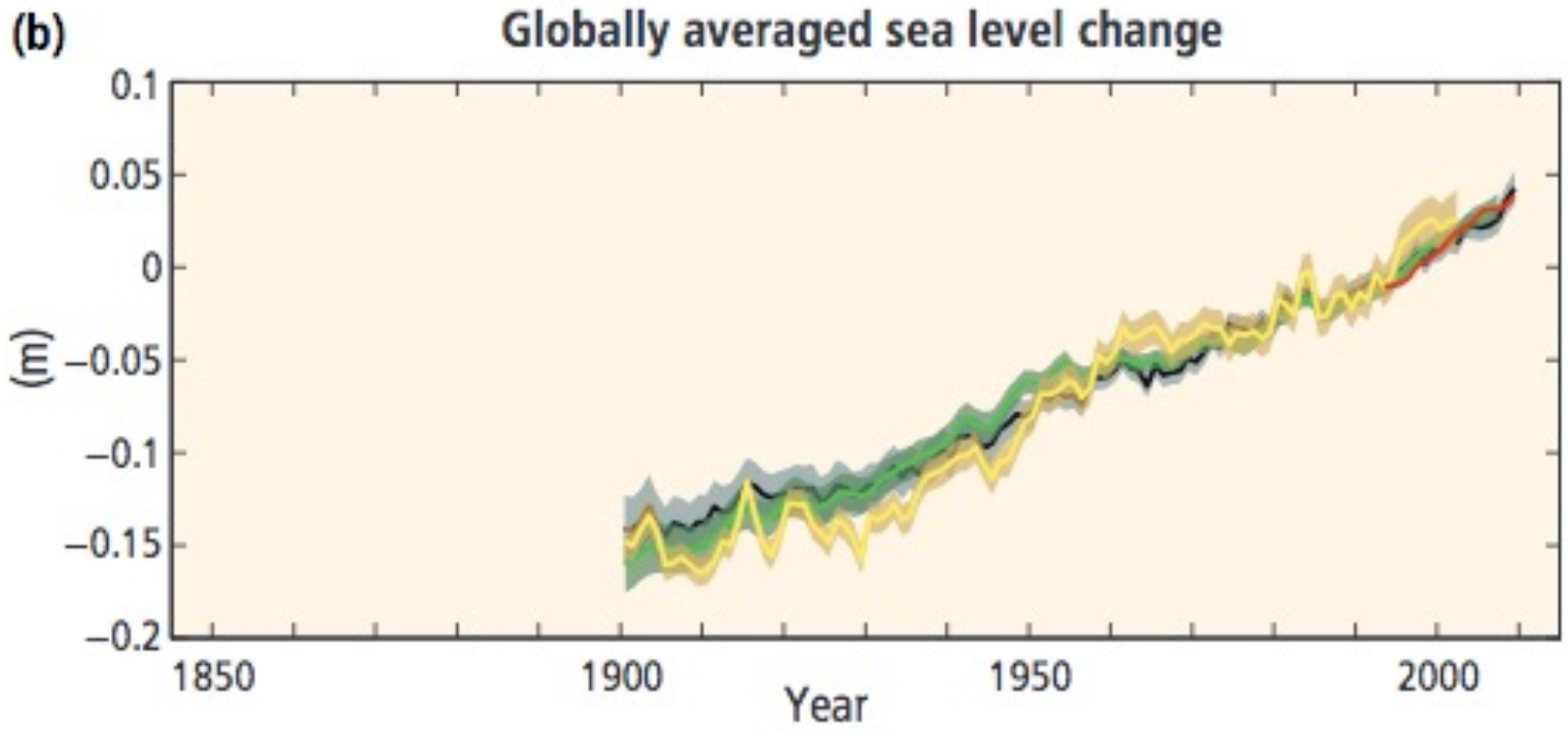


Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen. ***{1.1}***

The 2014 Synthesis Report

The Intergovernmental Panel on Climate Change

IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp



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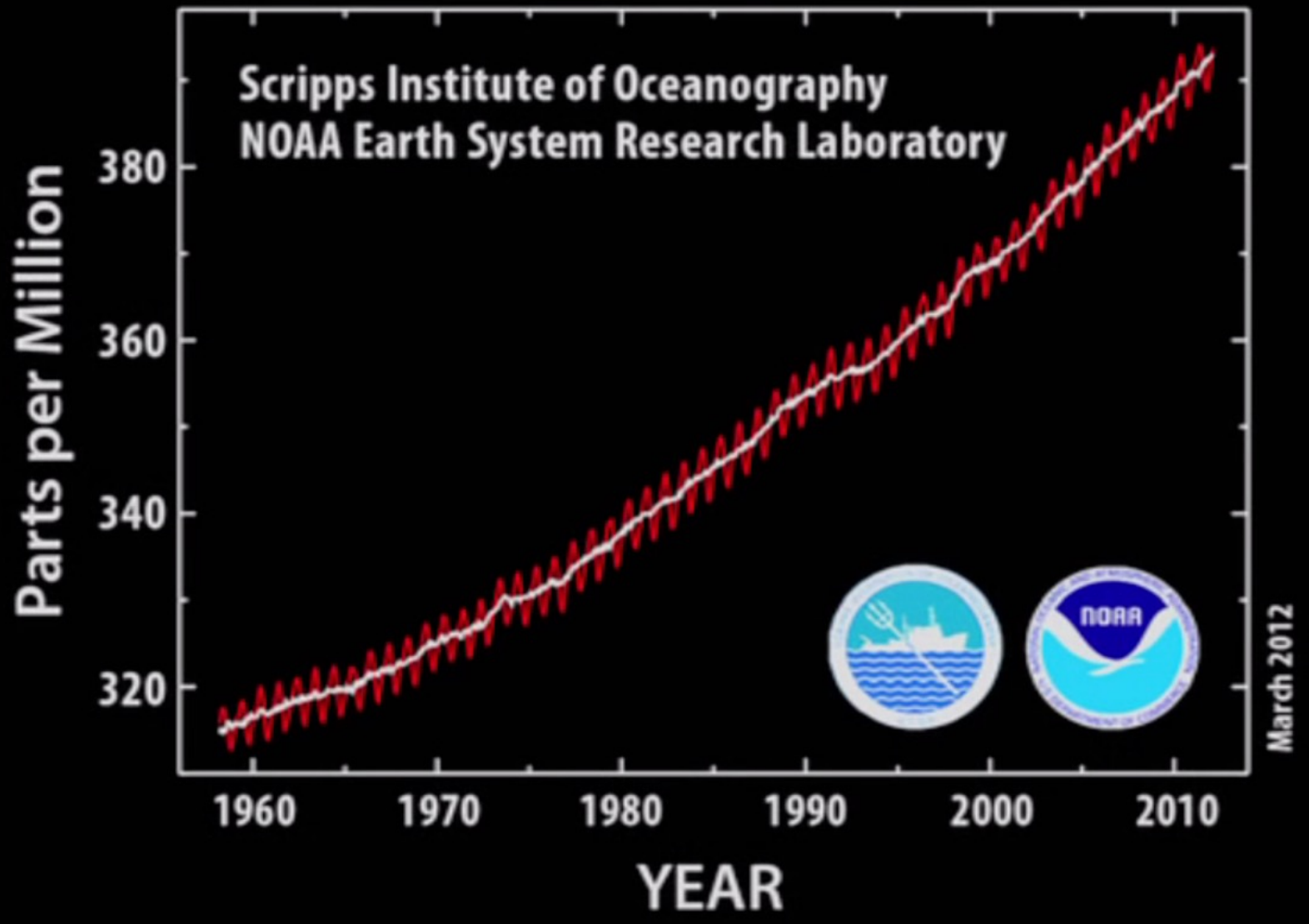
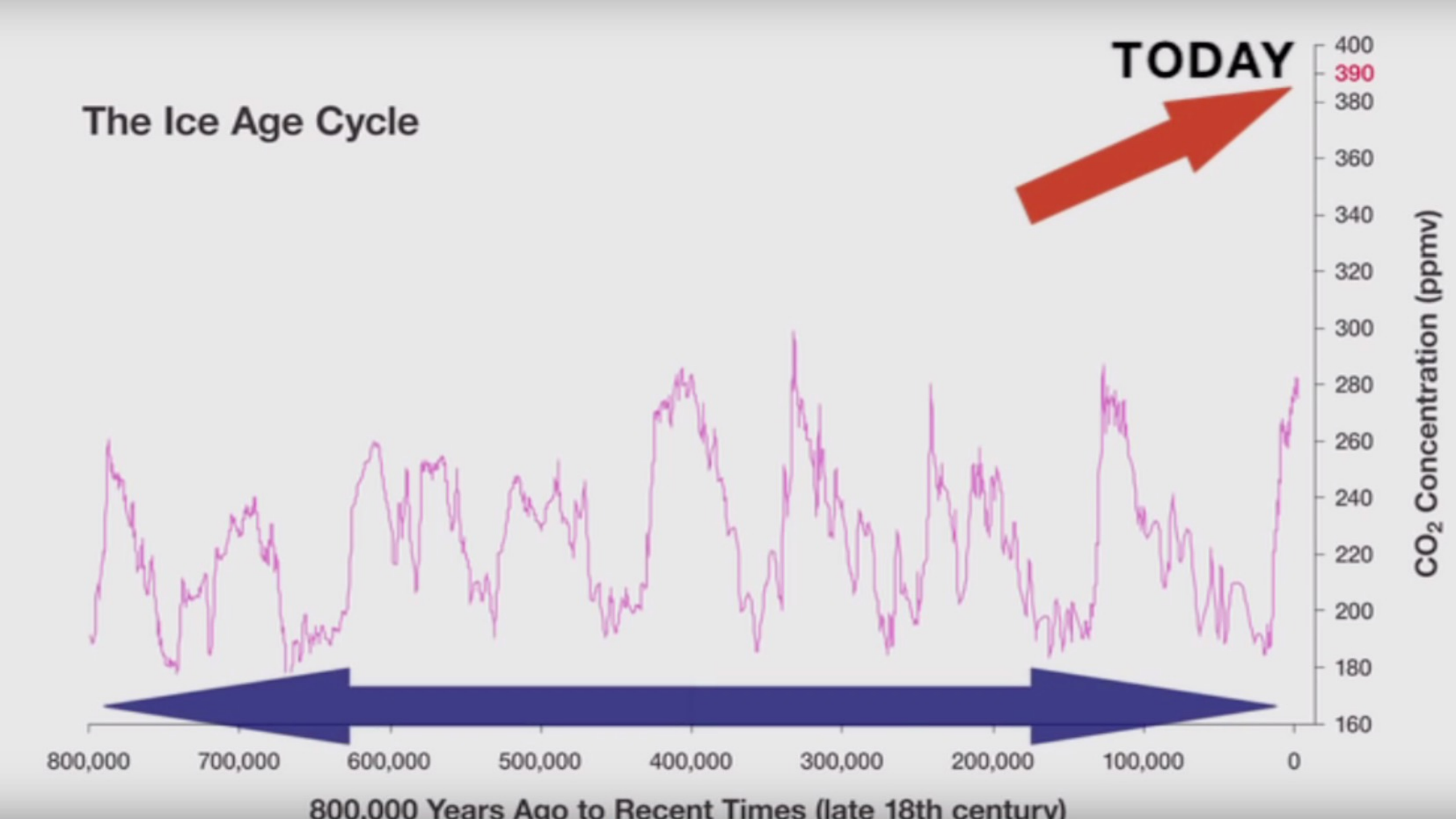
1896

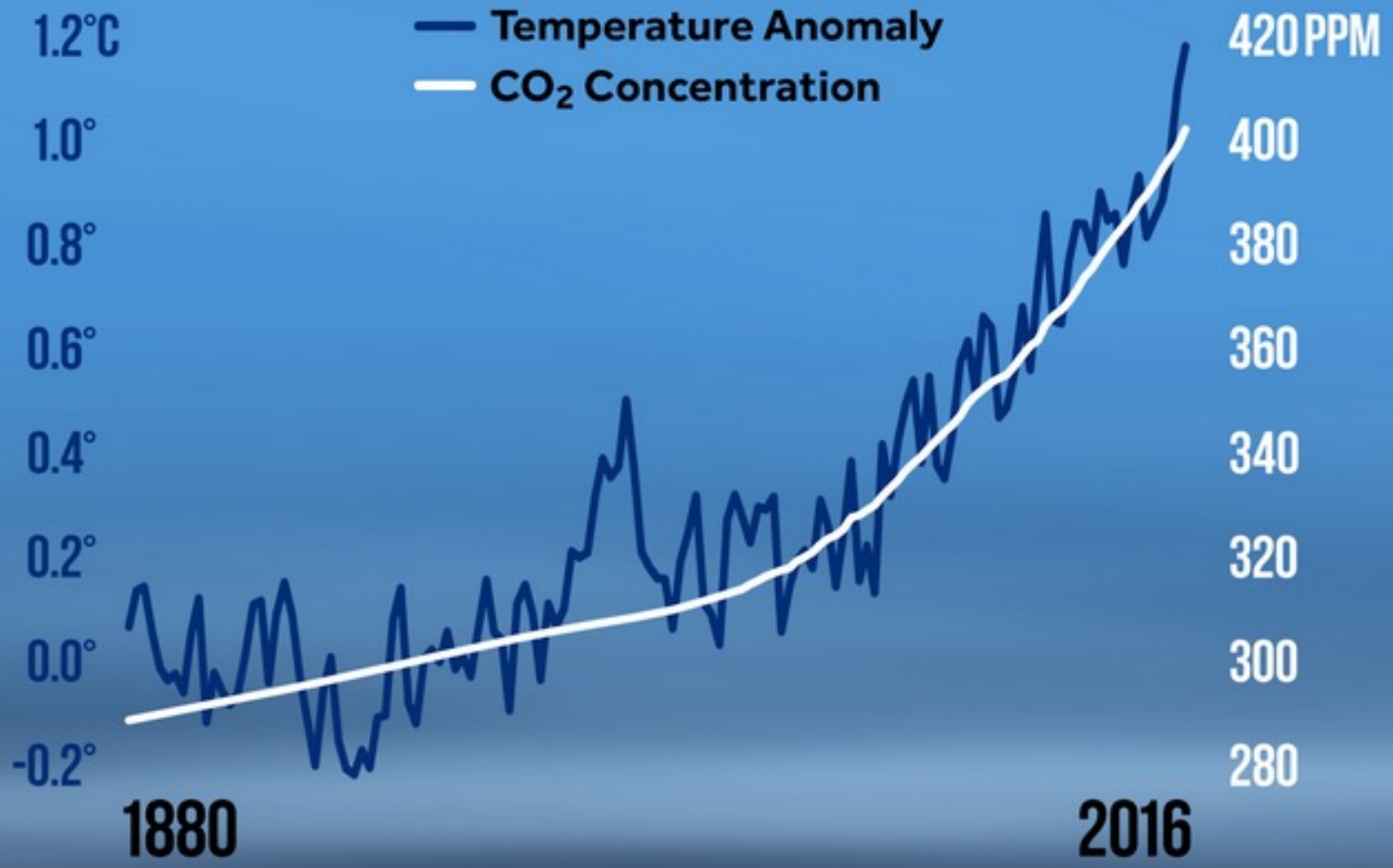
Svante Arrhenius

Atmospheric CO_2 at Mauna Loa Observatory




The Ice Age Cycle
TODAY
400
390
380
360
340
320
300
280
260
240
220
200
180
160
CO_2 Concentration (ppmv)
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
800,000 Years Ago to Recent Times (late 18th century)

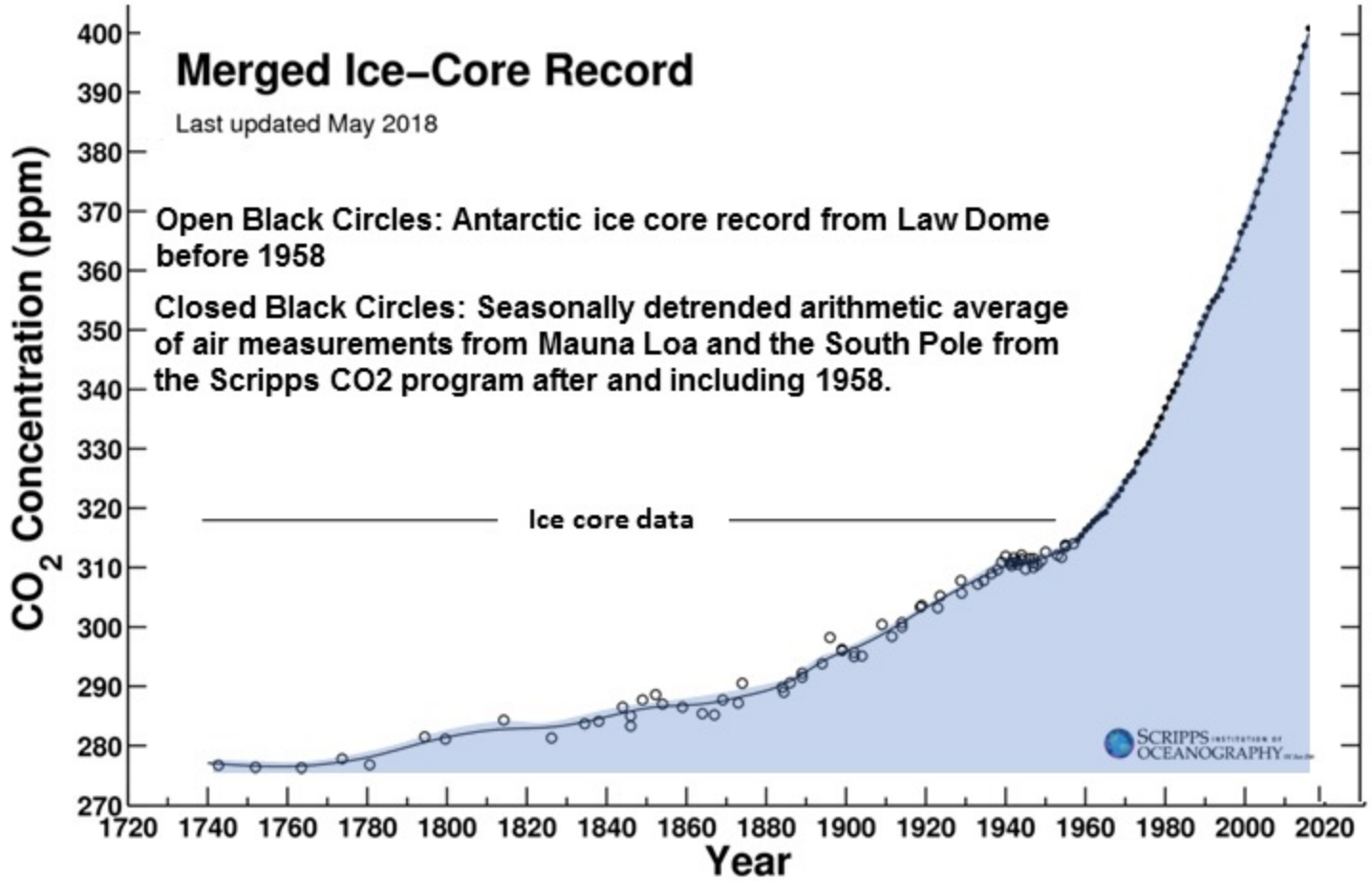
Global Temperature and Carbon Dioxide



Global temperature data averaged and adjusted to early industrial baseline (1881-1910).
Source: NASA GISS, NOAA NCEI, ESRL

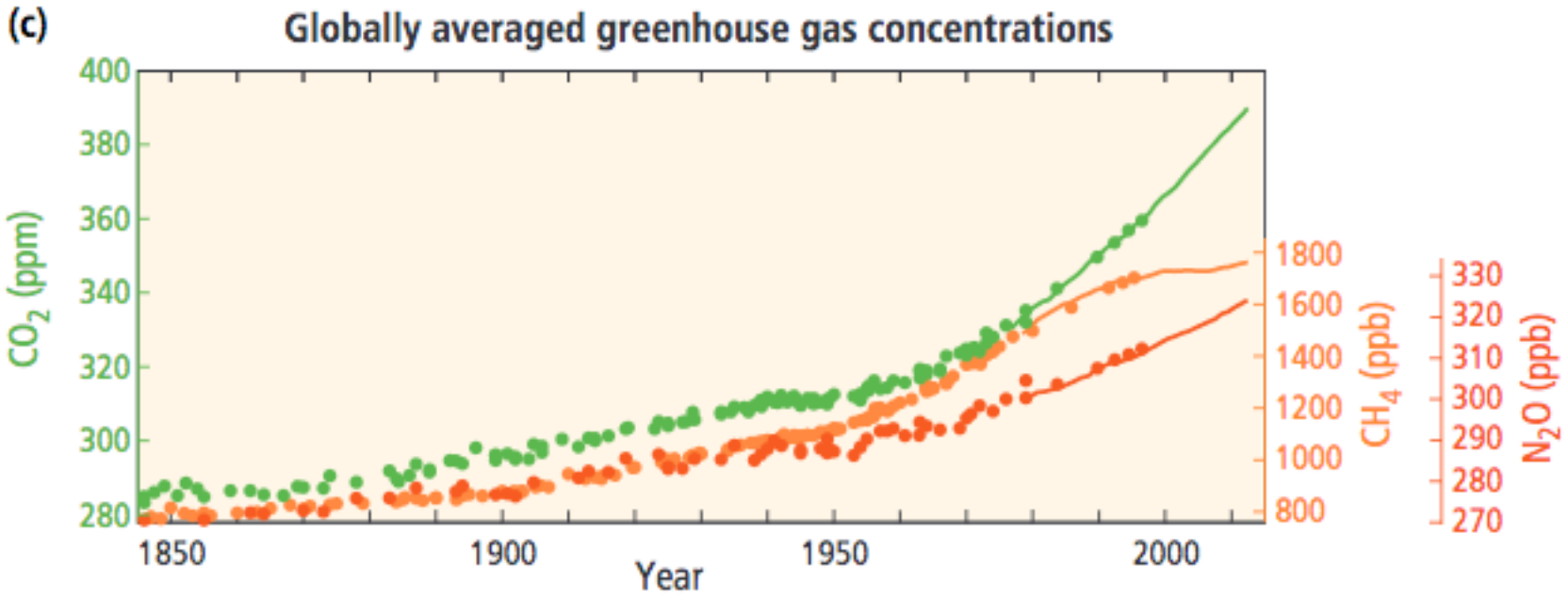
CLIMATE CENTRAL

Atmospheric CO2: merged ice core data and direct CO2 measurements (Mauna Loa) from 1740 to April 2018



Merged ice-core record of the time trend of the concentration of CO2, in ppm, in air extracted from an Antarctic ice core combined with the trend based on direct atmospheric measurements.

From Scripps Institute of Oceanography May 2018



Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are *extremely likely* to have been the dominant cause of the observed warming since the mid-20th century. *{1.2, 1.3.1}*

The 2014 Synthesis Report

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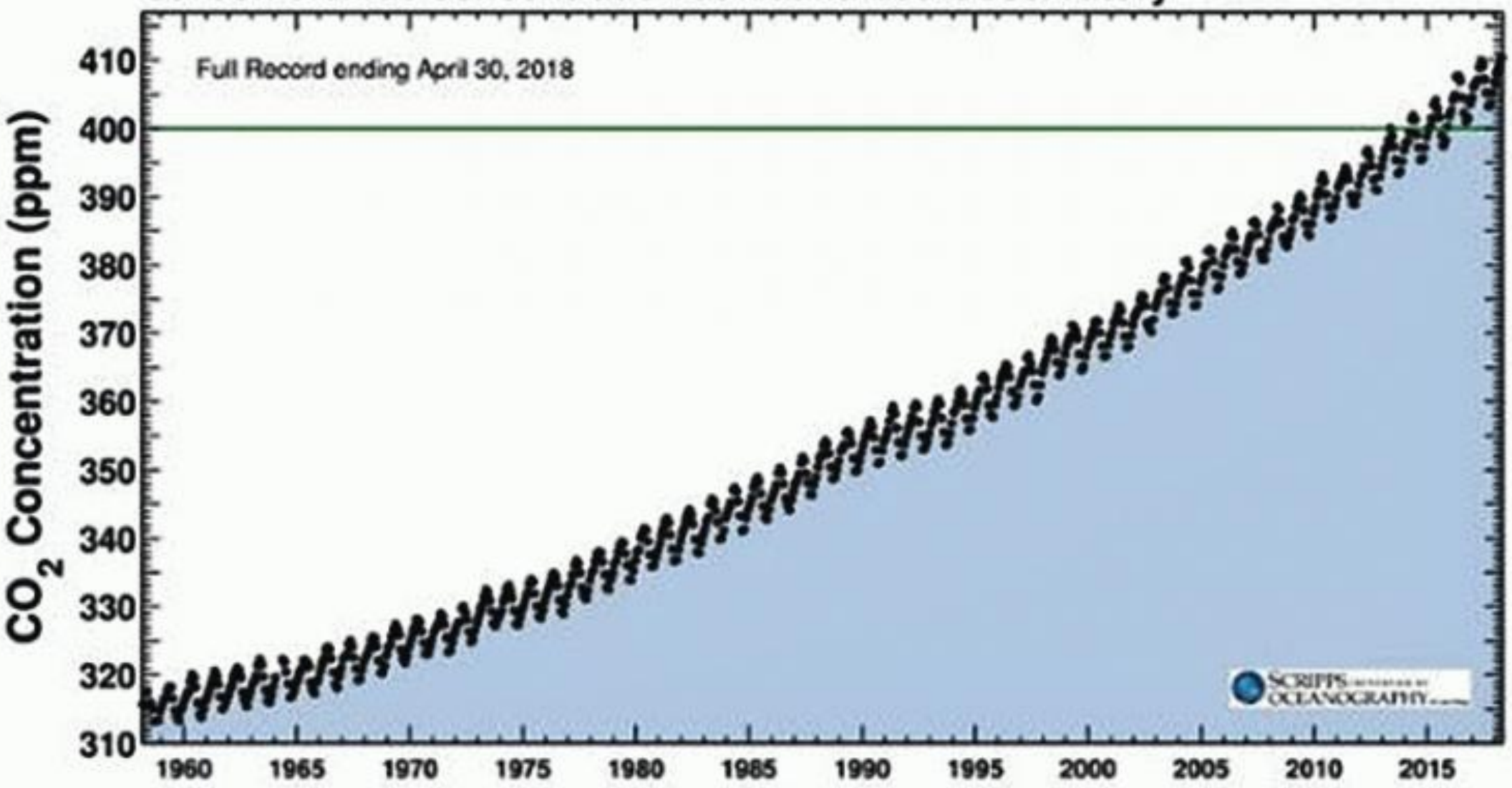
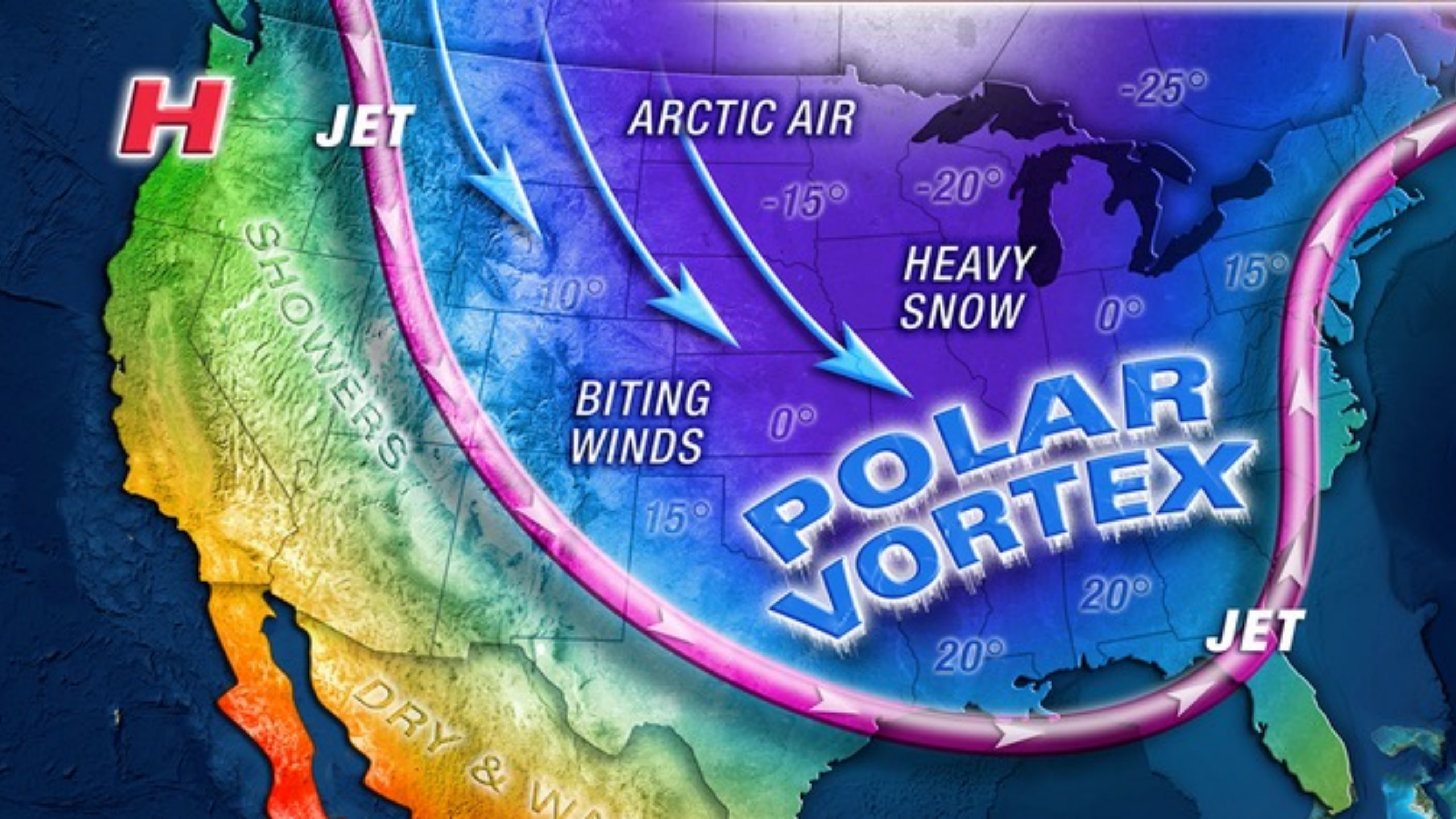
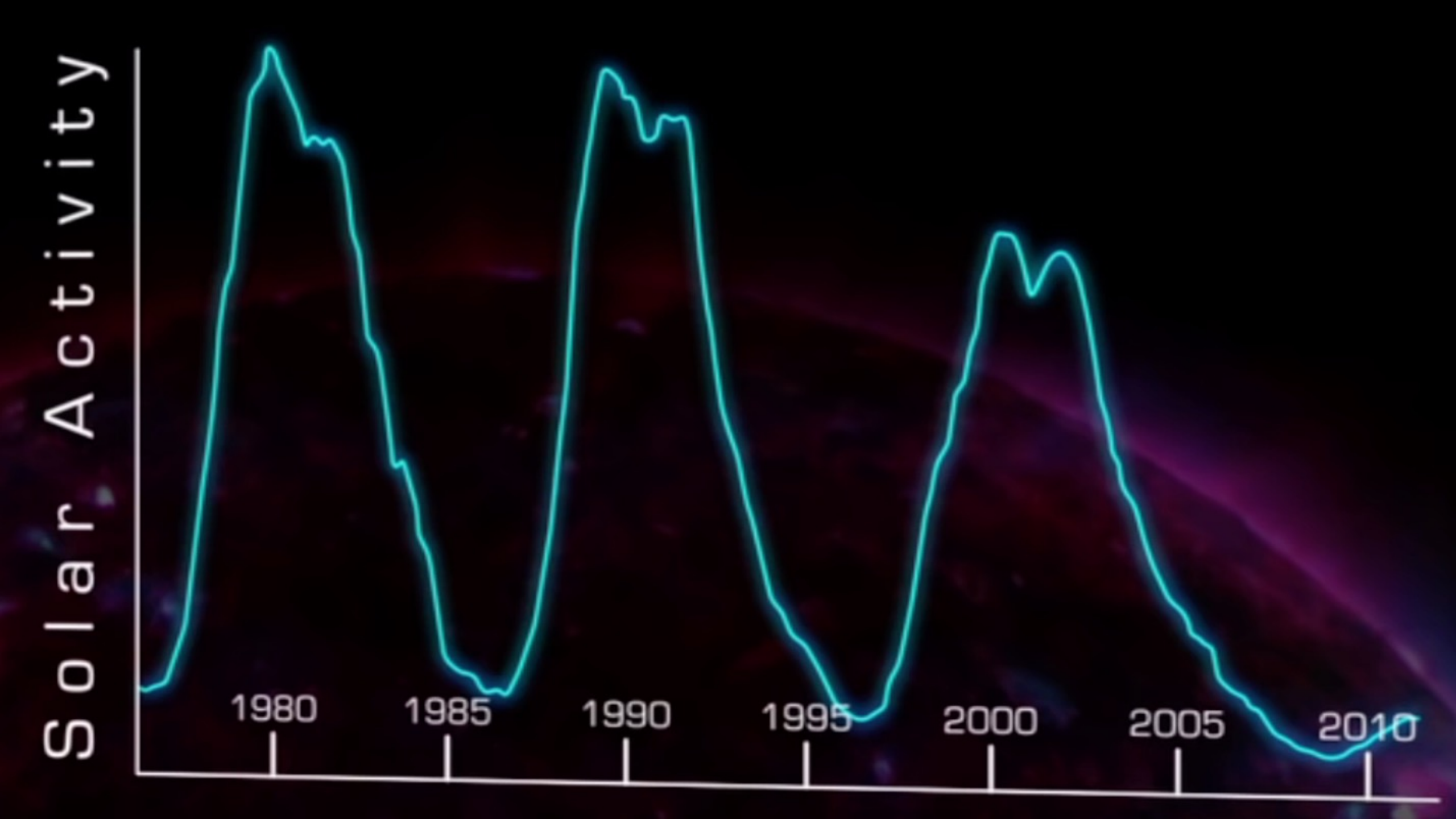
Latest CO_2 reading
April 29, 2018

411.24 ppm




LIVE
3:42 pm ET
U.S. SENATE
SEN. JAMES INHOFE
R-Oklahoma
C-SPAN2
c-span.org


H
JET
ARCTIC AIR
-25°
-20°
-15°
HEAVY
SNOW
15°
10°
0°
BITING
WINDS
0°
POLAR
VORTEX
15°
20°
JET
20°
SHOWERS
DRY &


Solar Activity
1980
1985
1990
1995
2000
2005
2010

Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems. *{1}*

The 2014 Synthesis Report
The Intergovernmental Panel on Climate Change

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GLOBAL WARMING
THE DEBATE

SCIENTIFIC EVIDENCE

Are scientists convinced?

YES
97%
of climate scientists think global warming is significantly due to human activity

NO
3%
of climate scientists do not think global warming is significantly due to human activity

Surveys have found that over 97% of actively publishing climate scientists are convinced humans are significantly changing global temperatures (Doran 2009). Not only is there a vast difference in the number of convinced versus unconvinced scientists, there is also a considerable gap in expertise between the two groups (Anderegg 2010).

There's a consensus of scientists
because there's a consensus of evidence

CLIMATE SCIENCE VS FOSSIL FUEL FICTION

NATIONAL ACADEMY OF SCIENCES

ipcc
INTERGOVERNMENTAL PANEL ON climate change

U.S. Global Change Research Program
National Climate Assessment

Leading Scientific Authorities on Climate Change

DOCUMENTING THE REALITY

OF GLOBAL WARMING

Chevron

Shell

bp

ExxonMobil

Peabody ENERGY

ConocoPhillips

ALEC American Legislative Exchange Council

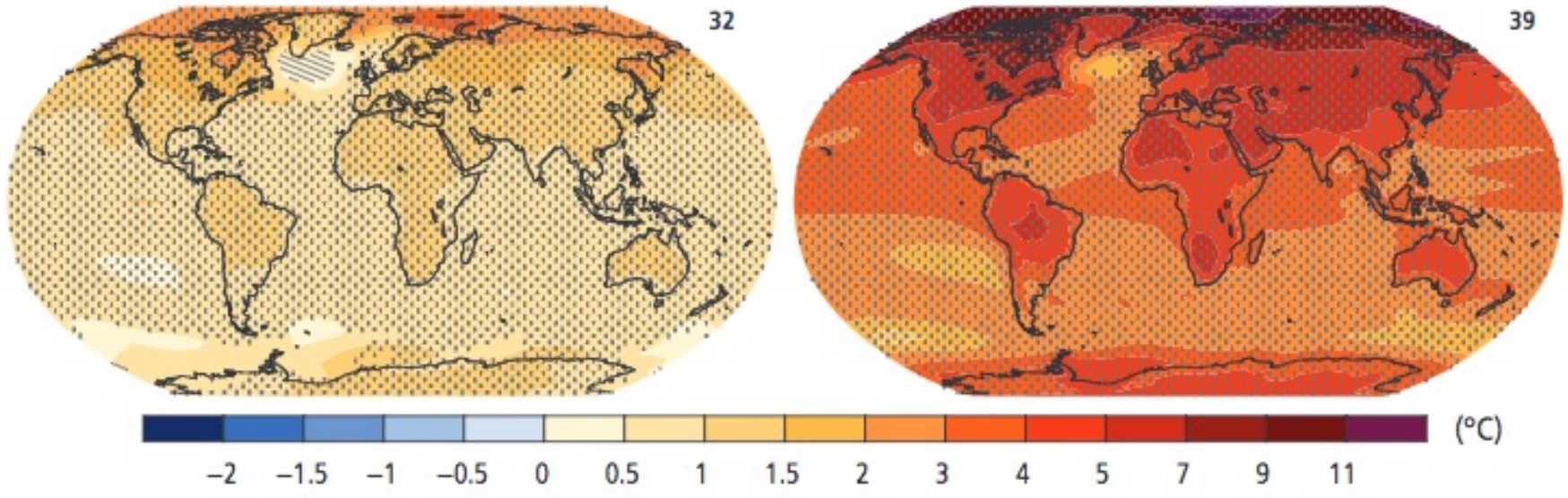
energy API AMERICAN PETROLEUM INSTITUTE

Fossil Fuel Companies and Their Lobbying Groups

DECEIVING THE PUBLIC

FOR NEARLY 30 YEARS–AND COUNTING

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



Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks. *{2}*

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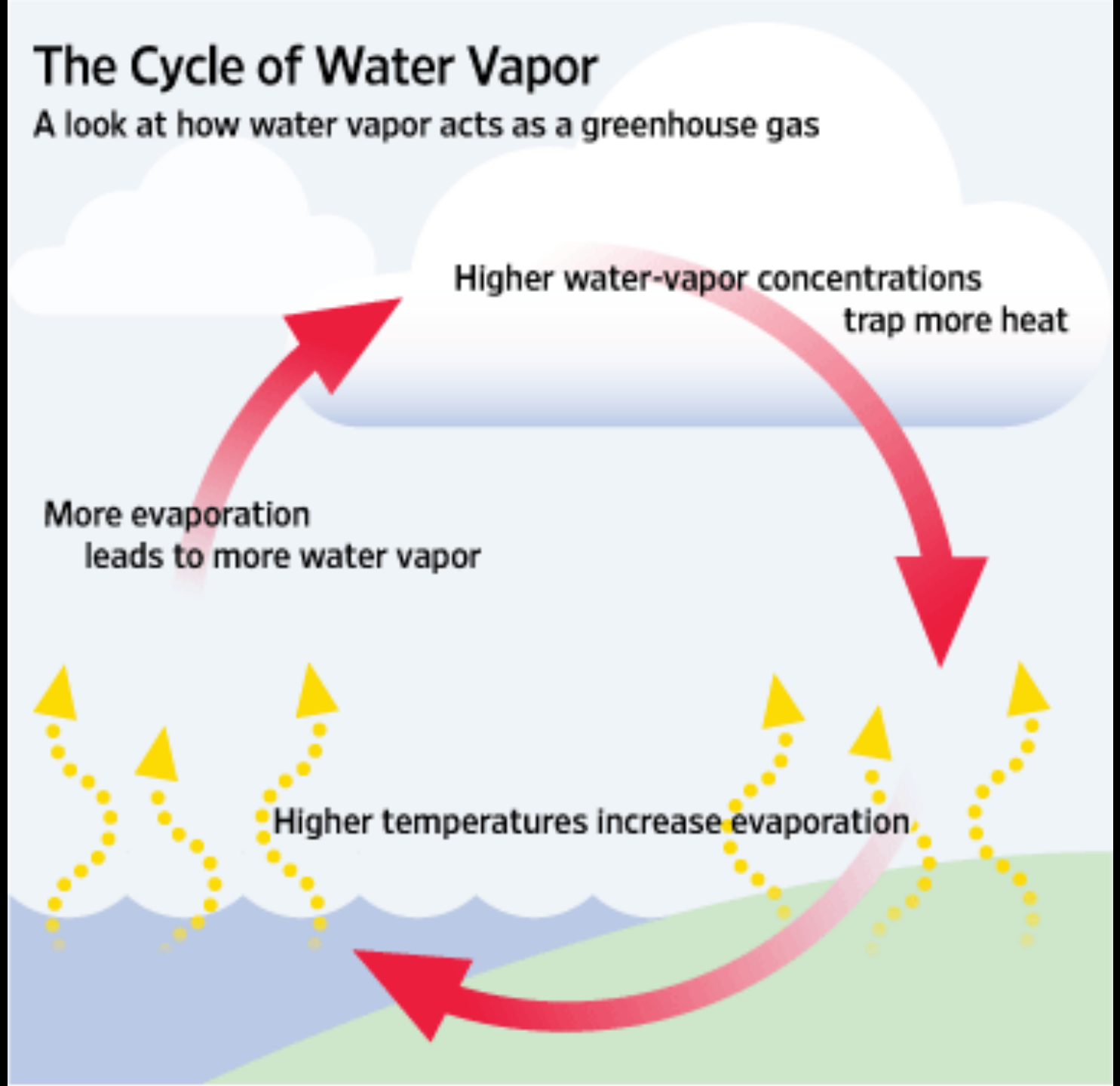
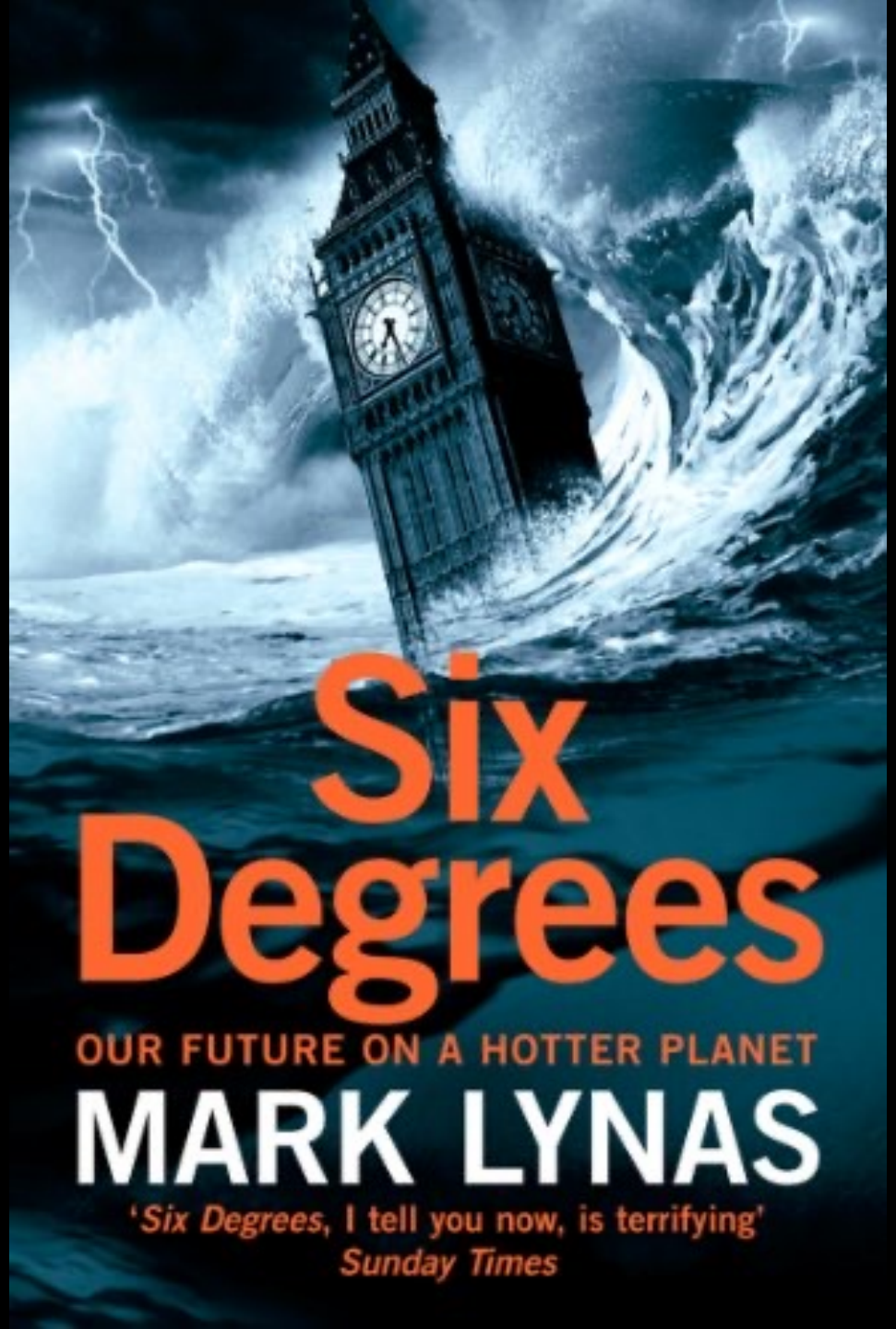
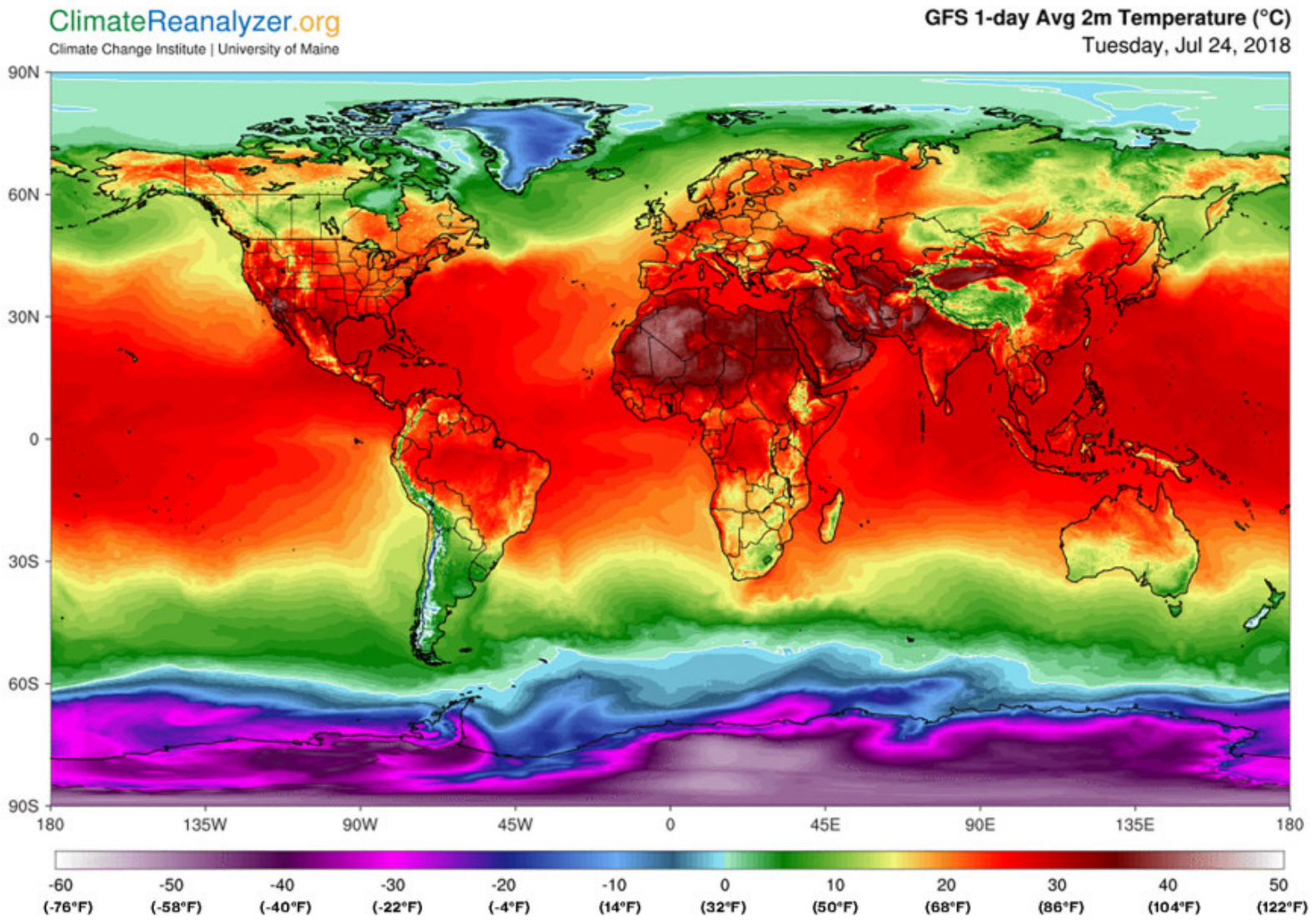
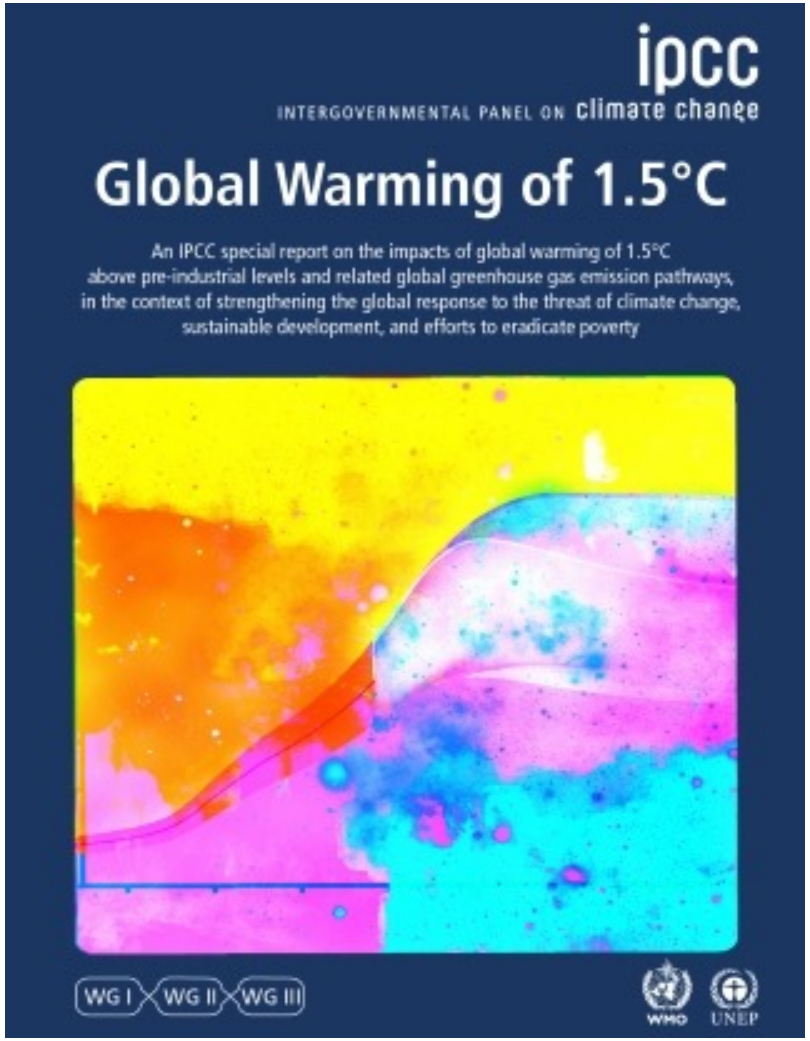

The Cycle of Water Vapor
A look at how water vapor acts as a greenhouse gas
Higher water-vapor concentrations
trap more heat
More evaporation
leads to more water vapor
Higher temperatures increase evaporation

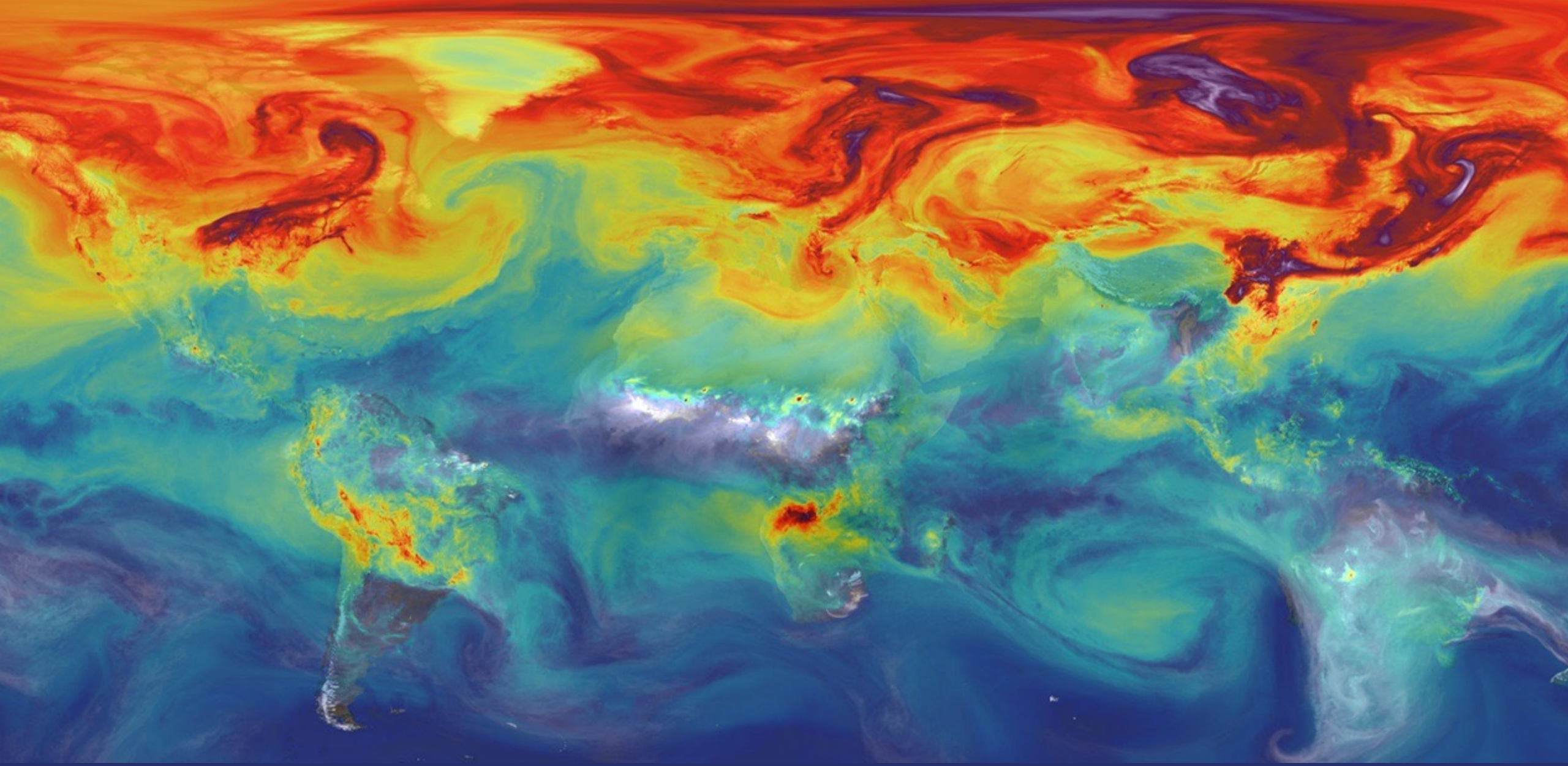

1.5 DEGREES


Six Degrees
OUR FUTURE ON A HOTTER PLANET
MARK LYNAS
'Six Degrees, I tell you now, is terrifying'
Sunday Times

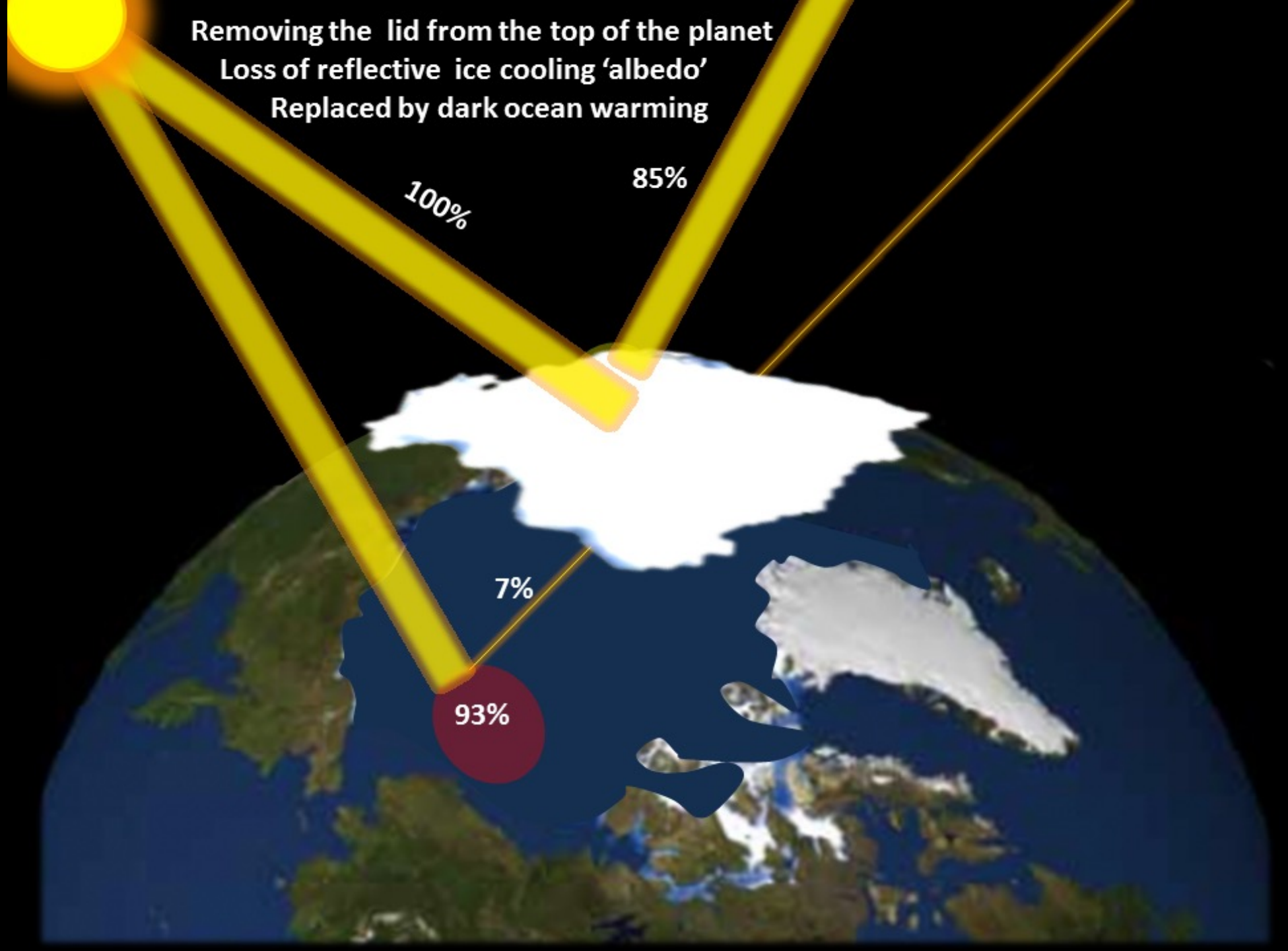


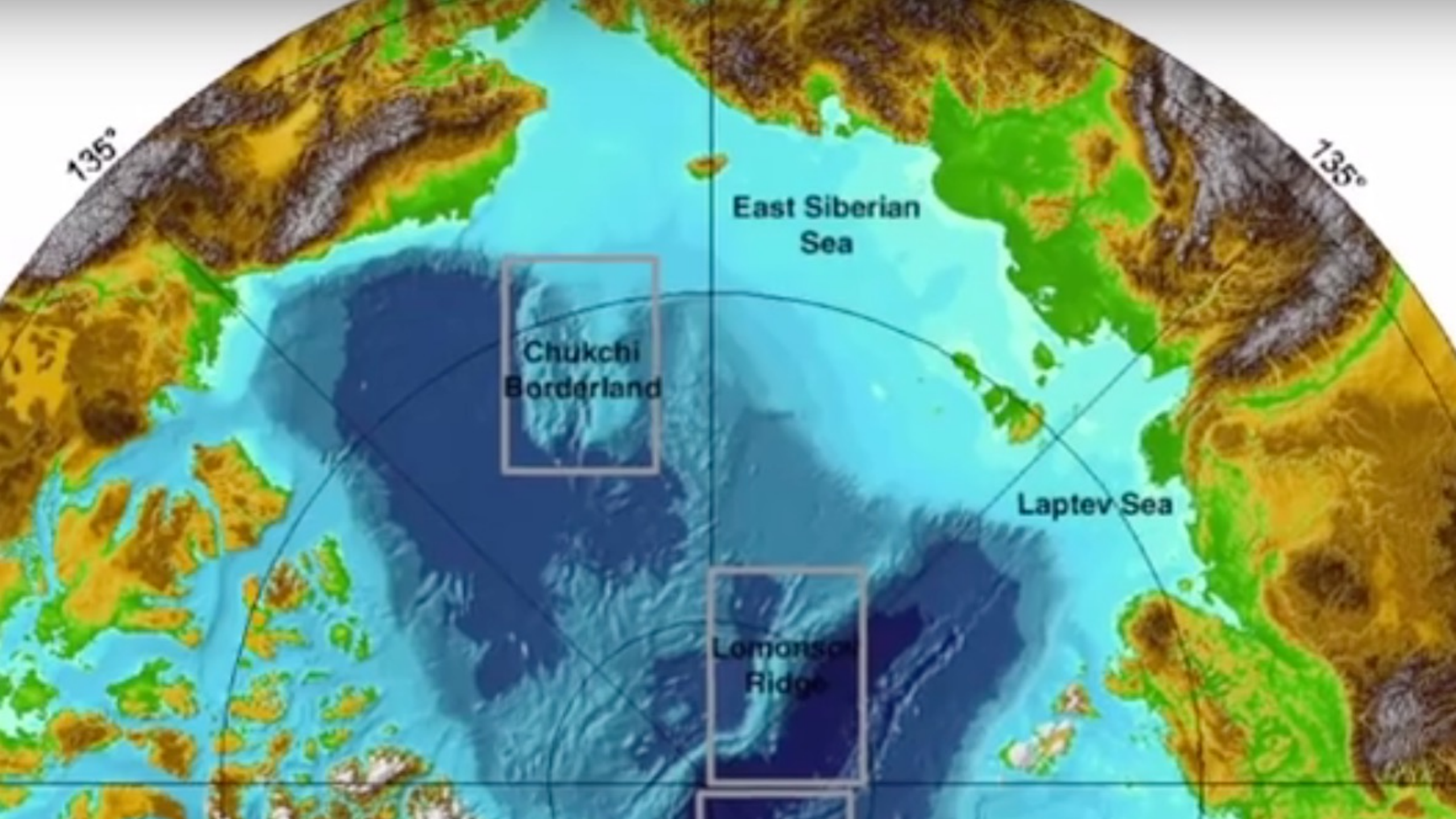


"Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate."

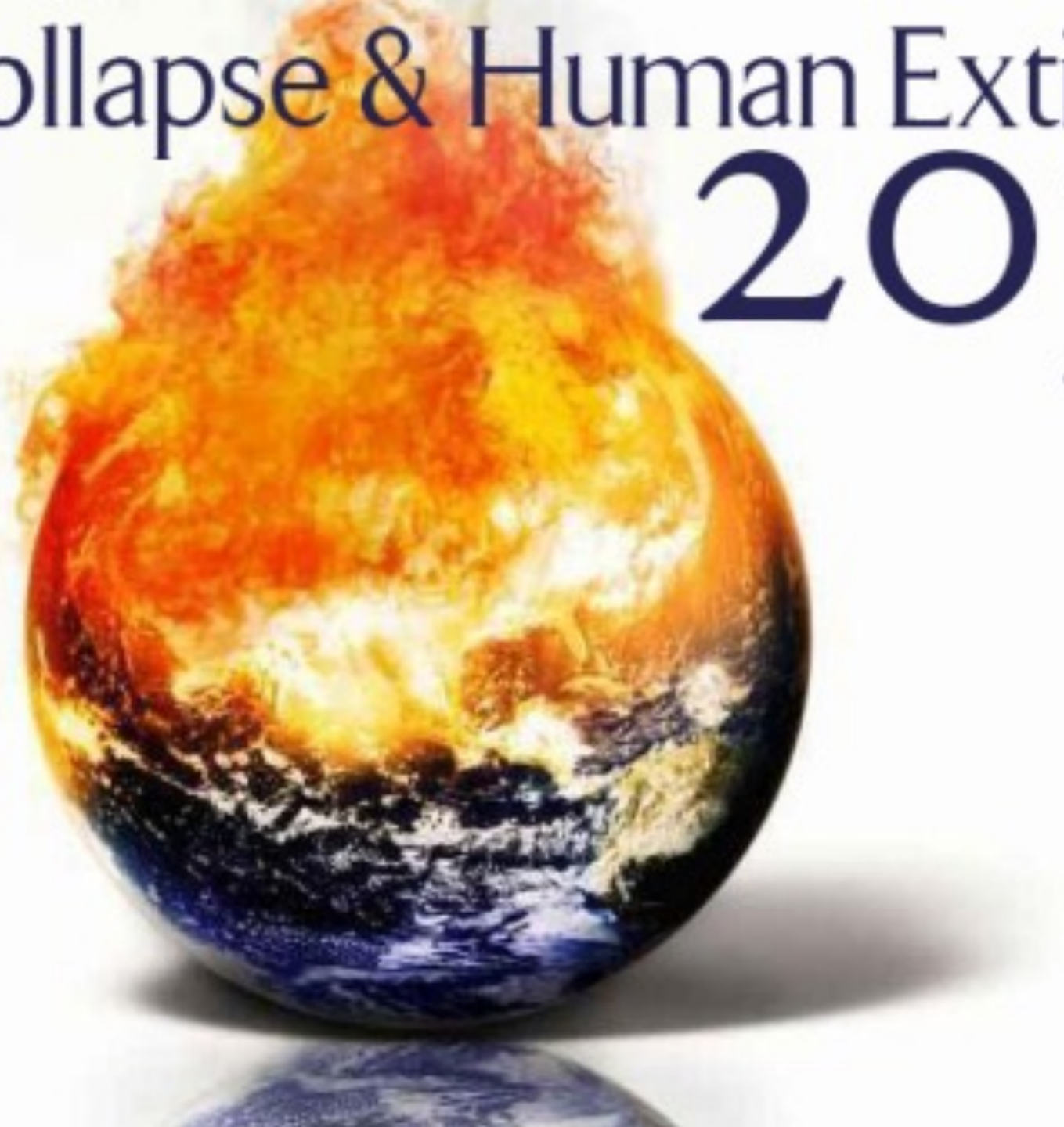


Global Temperature Anomalies


Removing the lid from the top of the planet
Loss of reflective ice cooling 'albedo'
Replaced by dark ocean warming
100%
85%
7%
93%


135°
135°
East Siberian Sea
Chukchi Borderland
Laptev Sea
Lomonosov Ridge

Climate Collapse & Human Extinction 2030



Philosophy of Climate Change

10 March 1967, Volume 155, Number 3767 SCIENCE

The Historical Roots of Our Ecologic Crisis

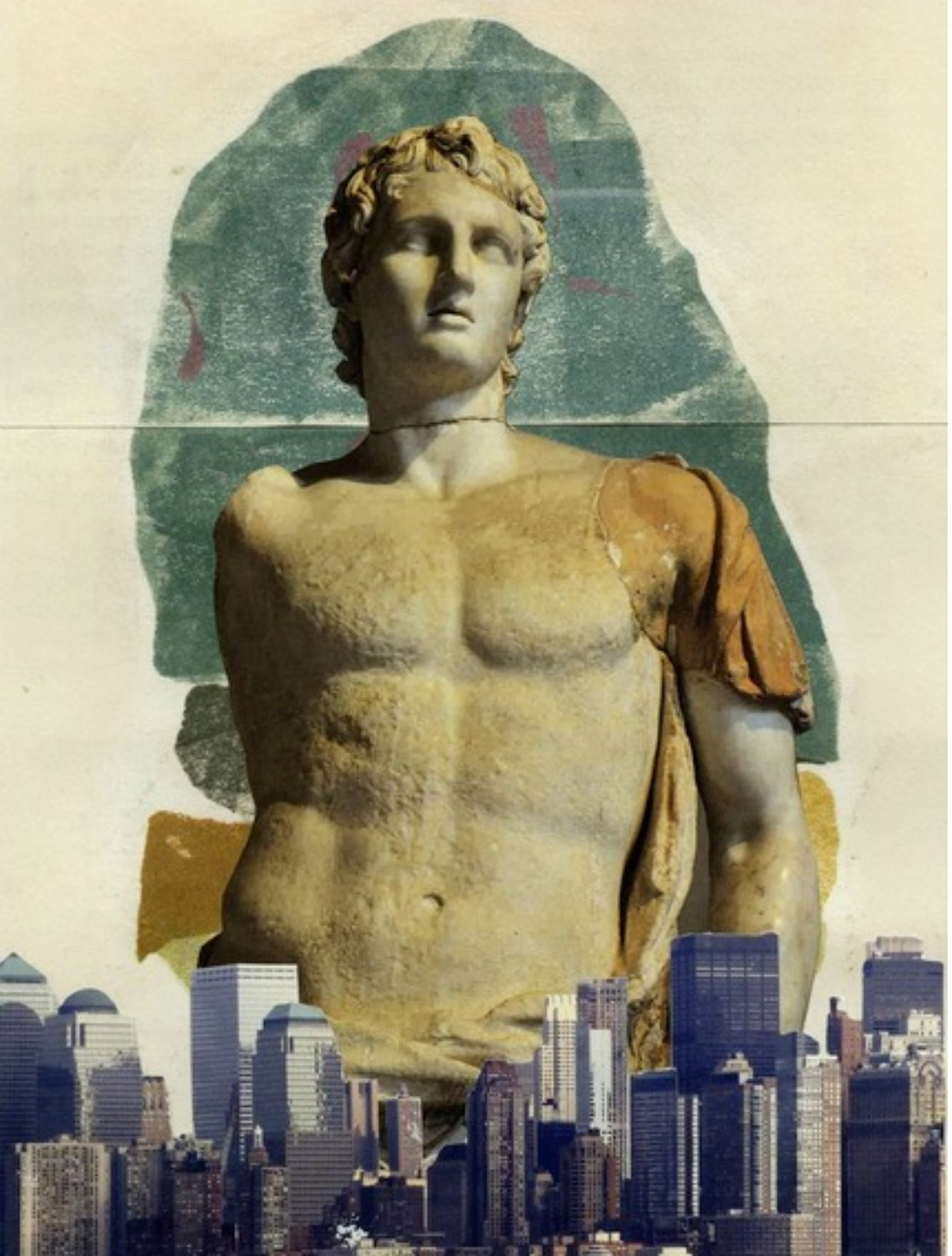
Lynn White, Jr.

A conversation with Aldous Huxley not infrequently put one at the receiving end of an unforgettable monologue. About a year before his lamented death he was discoursing on a favorite topic: Man's unnatural treatment of nature and its sad results. To illustrate his point he told how, during the previous summer, he had returned to a little valley in England where he had spent many happy months as a child. Once it had been composed of delightful grassy glades; now it was becoming overgrown with unsightly brush because the rabbits that formerly kept such growth under control had largely succumbed to a disease, myxomatosis, that was deliberately introduced by the local farmers to reduce the rabbits' destruction of crops. Being something of a Philistine, I could be silent no longer, even in the interests of great rhetoric. I interrupted to point out that the rabbit itself had been brought as a domestic animal to England in 1176, presumably to improve the protein diet of the peasantry.

helped to exterminate the monster mammals of the Pleistocene from much of the globe is plausible, if not proved. For 6 millennia at least, the banks of the lower Nile have been a human artifact rather than the swampy African jungle which nature, apart from man, would have made it. The Aswan Dam, flooding 5000 square miles, is only the latest stage in a long process. In many regions terracing or irrigation, overgrazing, the cutting of forests by Romans to build ships to fight Carthaginians or by Crusaders to solve the logistics problems of their expeditions, have profoundly changed some ecologies. Observation that the French landscape falls into two basic types, the open fields of the north and the *bocage* of the south and west, inspired Marc Bloch to undertake his classic study of medieval agricultural methods. Quite unintentionally, changes in human ways often affect nonhuman nature. It has been noted, for example, that the advent of the automobile eliminated

nating in our own time in the reclamation of the Zuider Zee. What, if any, species of animals, birds, fish, shore life, or plants have died out in the process? In their epic combat with Neptune have the Netherlanders overlooked ecological values in such a way that the quality of human life in the Netherlands has suffered? I cannot discover that the questions have ever been asked, much less answered.

People, then, have often been a dynamic element in their own environment, but in the present state of historical scholarship we usually do not know exactly when, where, or with what effects man-induced changes came. As we enter the last third of the 20th century, however, concern for the problem of ecologic backlash is mounting feverishly. Natural science, conceived as the effort to understand the nature of things, had flourished in several eras and among several peoples. Similarly there had been an age-old accumulation of technological skills, sometimes growing rapidly, sometimes slowly. But it was not until about four generations ago that Western Europe and North America arranged a marriage between science and technology, a union of the theoretical and the empirical approaches to our natural environment. The emergence in widespread practice of the Baconian creed that scientific knowledge means technological power over nature can scarcely be dated before about 1850, save in the chemical industries, where it is anticipated in the 18th century. Its acceptance as a normal pattern of action may mark the greatest event in human his-



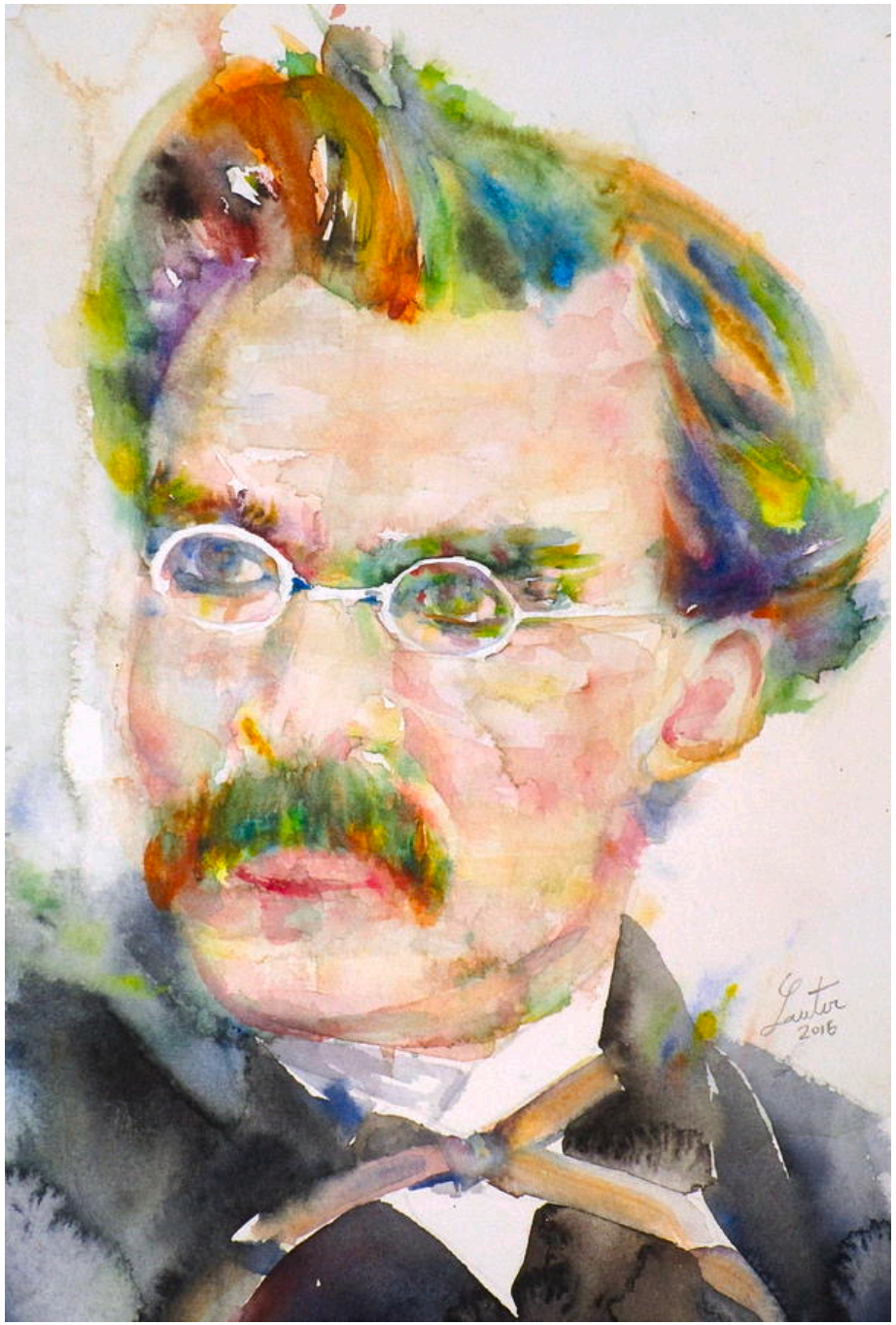
ANTHROPOCENTRISM

From Greek Ancient Greek: ἄνθρωπος, ánthrōpos, "human being"; and Ancient Greek: κέντρον, kéntron, "center") is the belief that human beings are the most important entity in the universe.

The **Anthropocene** defines Earth's most recent geologic time period as being human-influenced, or anthropogenic, based on overwhelming global evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes are now altered by humans.

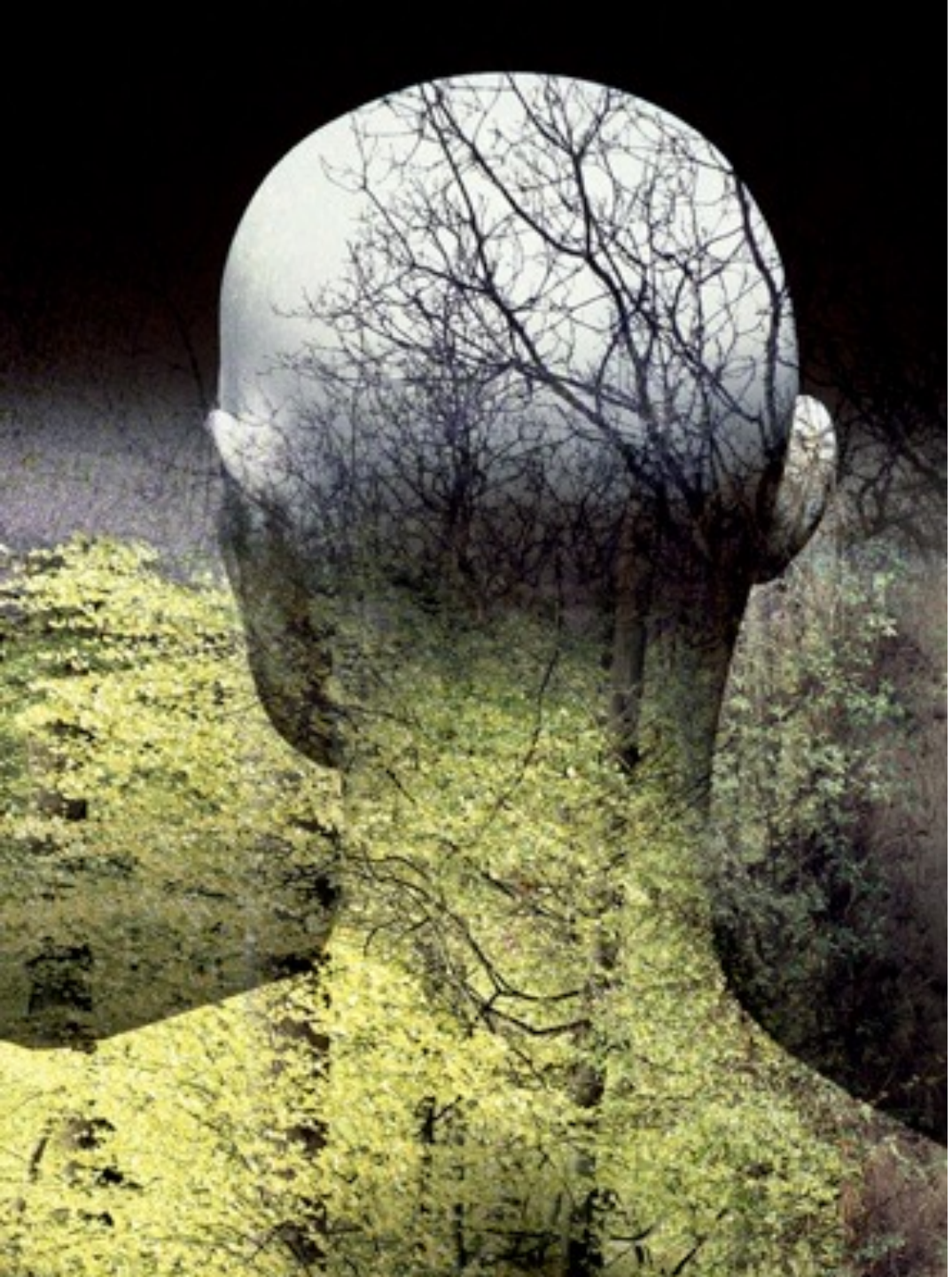
The word combines the root "anthropo", meaning "human" with the root "-cene", the standard suffix for "epoch" in geologic time.

The Anthropocene is distinguished as a new period either after or within the Holocene, the current epoch, which began approximately 10,000 years ago (about 8000 BC) with the end of the last glacial period.



“If we could communicate with the gnat, we would learn that he likewise flies through the air with the same solemnity, that he feels the flying center of the universe within himself.”

Nietzsche,
“On Truth and Lies in an Nonmoral Sense,”
1873



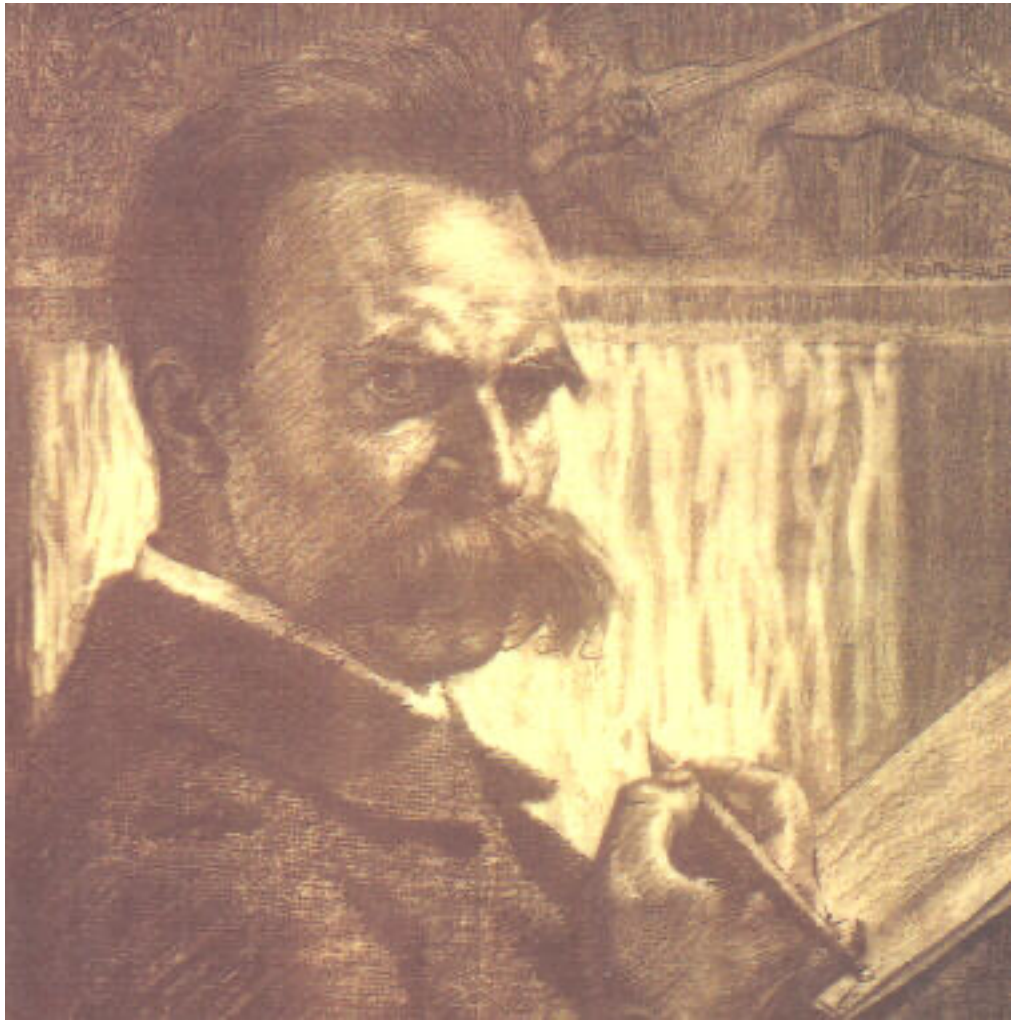
It is the same with the human as with the tree. The more it aspires to the height and the light, the more its roots strive earthward, downward, into the dark, the depths…

Nietzsche, *Thus Spoke Zarathustra, 1885*

I beseech you, my brothers, *remain loyal to the earth,* and do not believe those who speak to you of otherworldly hopes! Poison-mixers are they, whether they know it or not. Despisers of life are they, decaying and poisoned themselves, of whom the earth is weary: so let them go.

"Once the sin against God was the greatest sin; but God died, and these sinners died with him. To sin against the earth is now the most dreadful thing."

Nietzsche, *Thus Spoke Zarathustra, 1885*



The “kingdom of heaven” is a state of the heart—not something that is to come “above the earth” or “after death.”

The “kingdom of God” is nothing that one expects; it has no yesterday and no day after tomorrow, it will not come in “a thousand years”—it is an experience of the heart; it is everywhere, it is nowhere.

Nietzsche, *The Antichrist. 1888*

I go back, I tell the *genuine* history of Christianity. The very word "Christianity" is a misunderstanding: in truth, there was only *one* Christian, and he died on the cross.

It is false to the point of nonsense to find the mark of the Christian in a "faith," for instance, in the faith in redemption through Christ: only Christian *practice*, a life such as he *lived* who died on the cross, is Christian.

Such a life is still possible today, for certain people even necessary: genuine, original Christianity will be possible at all times. Not a faith, but a doing; above all, a *not* doing of many things, another state of *being*.

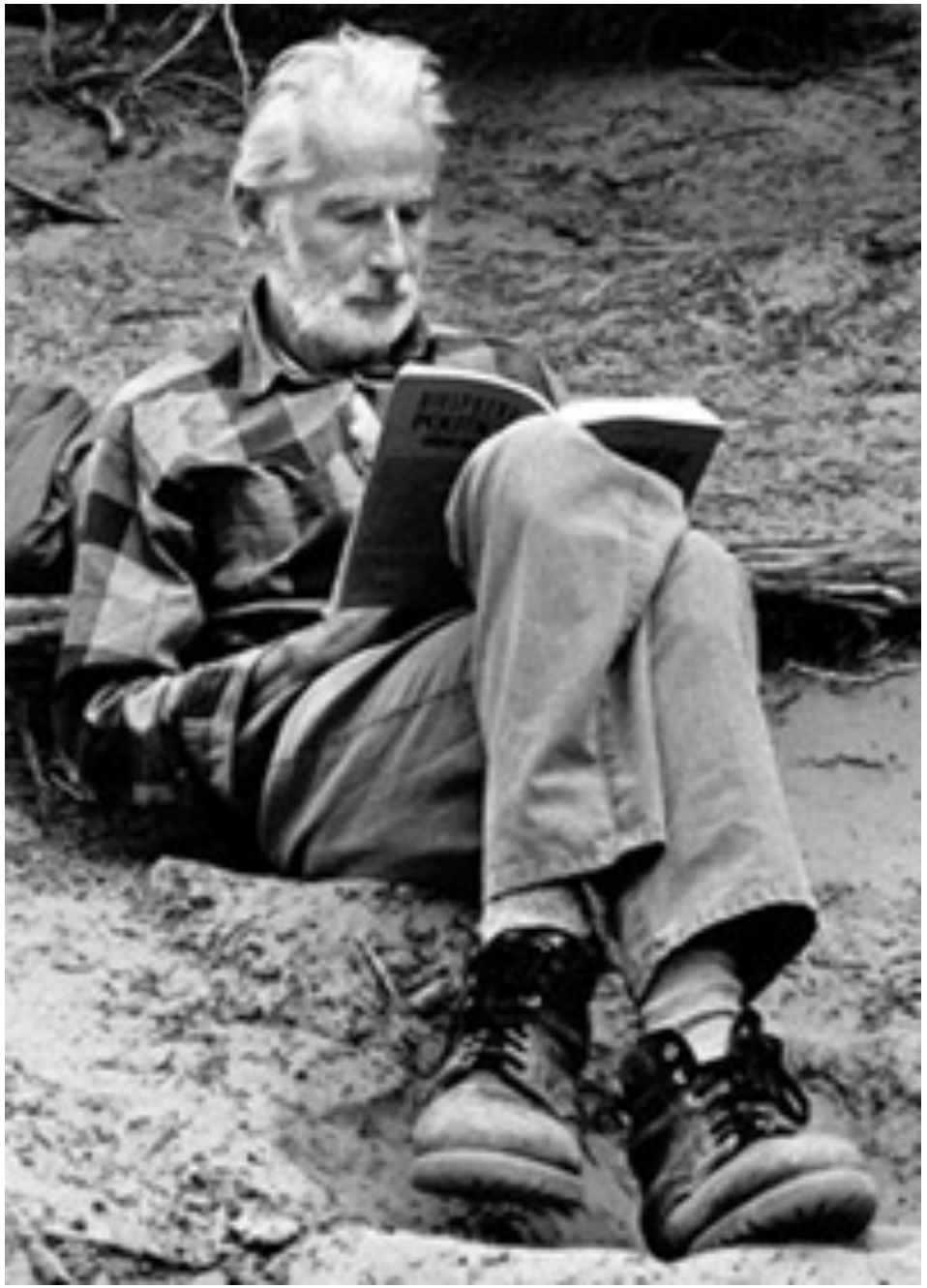
Nietzsche, *The Antichrist. 1888*

THE LAND ETHIC

"A land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it."

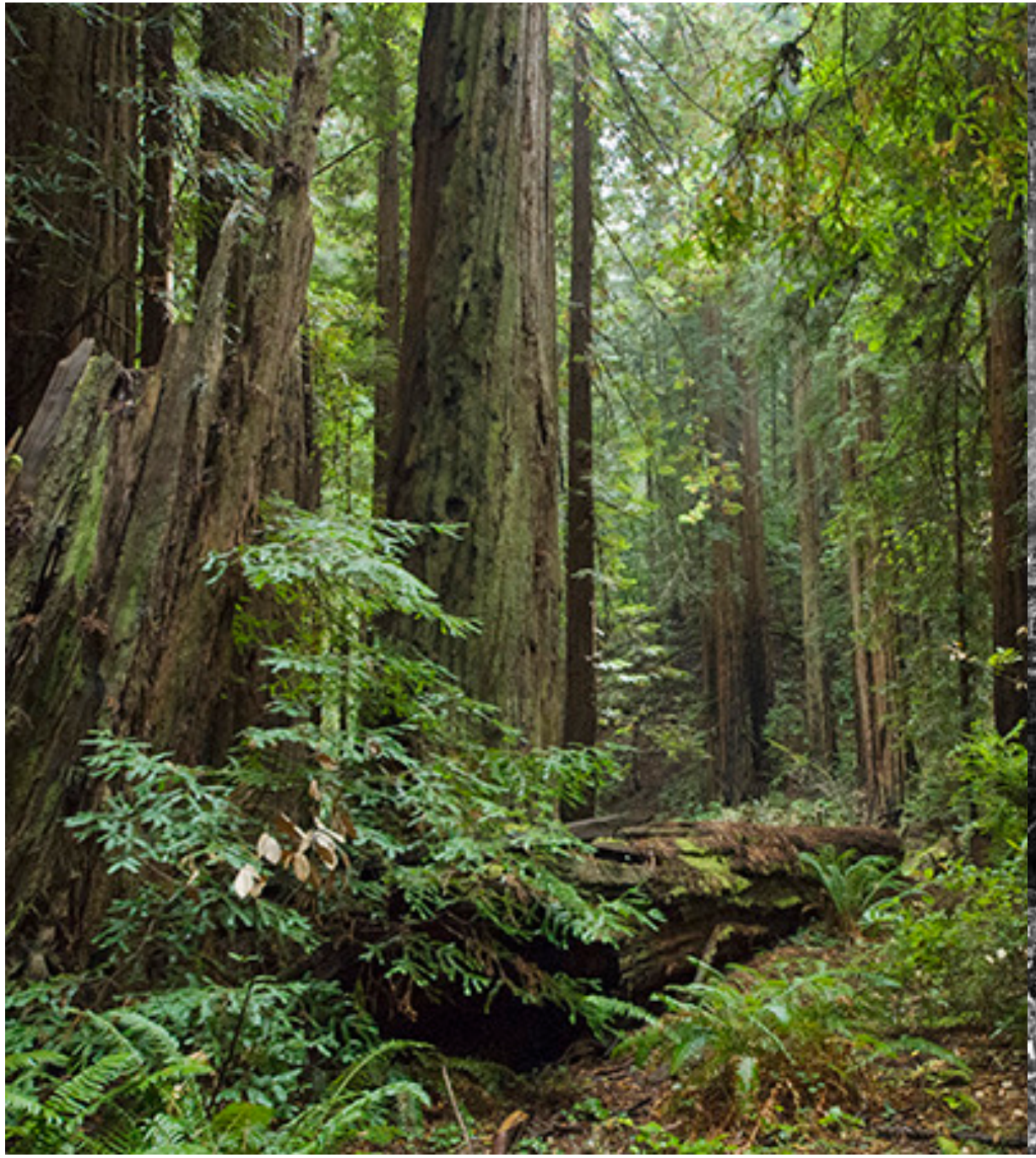
Aldo Leopold,

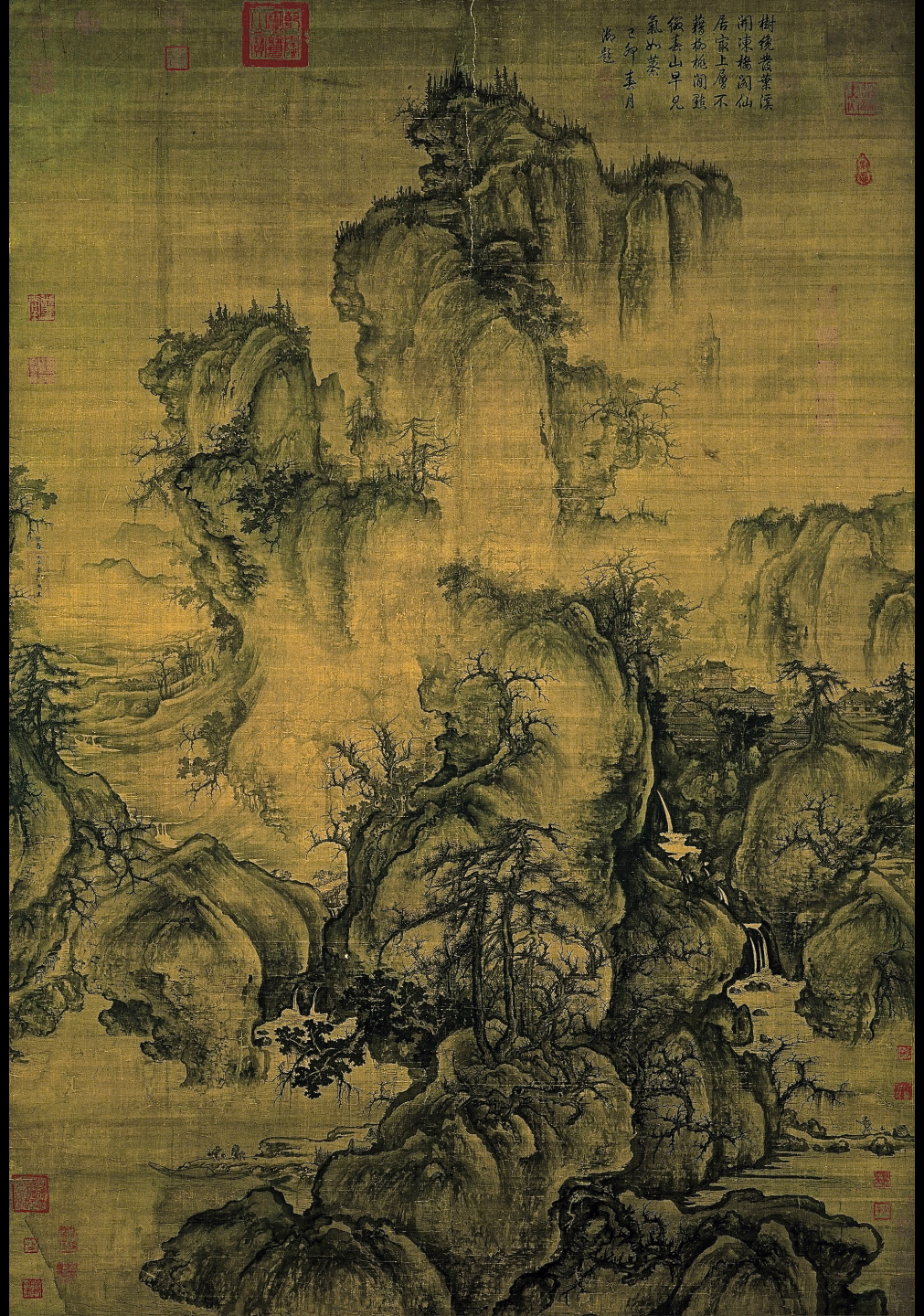
A Sand County Almanac, 1949.



DEEP ECOLOGY

In 1972, Arne Naess coined the term “deep ecology”, which he contrasted with “shallow ecology”: to him, “present human interference with the nonhuman world is excessive, and the situation is rapidly worsening” and all the answers that had been found at the time were superficial and anthropocentric. They addressed the symptoms rather than the causes, and aimed to perpetuate the human race’s domination of the earth.





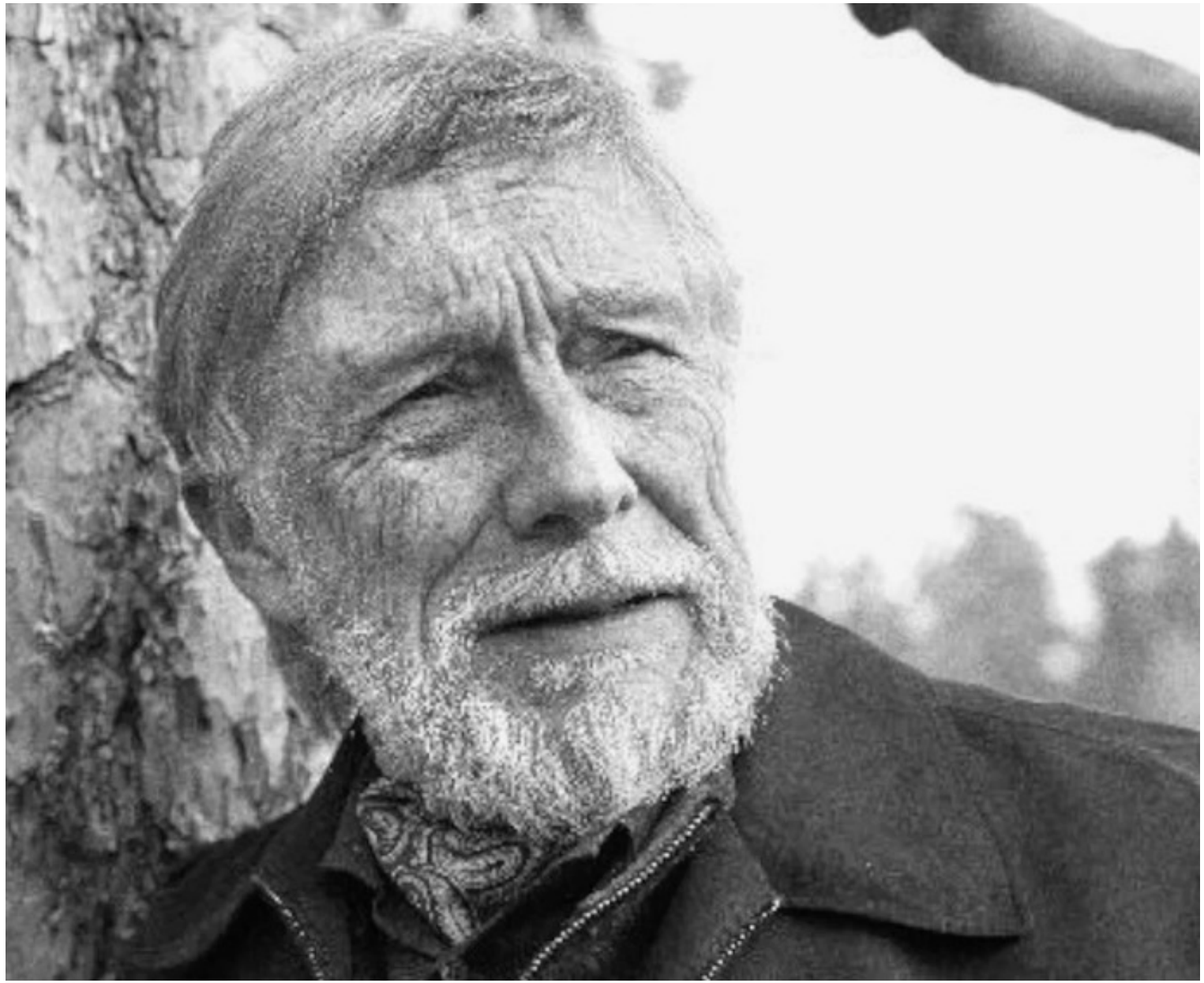
Thich Nhat Hanh with Martin Luther King, Jr., 1966

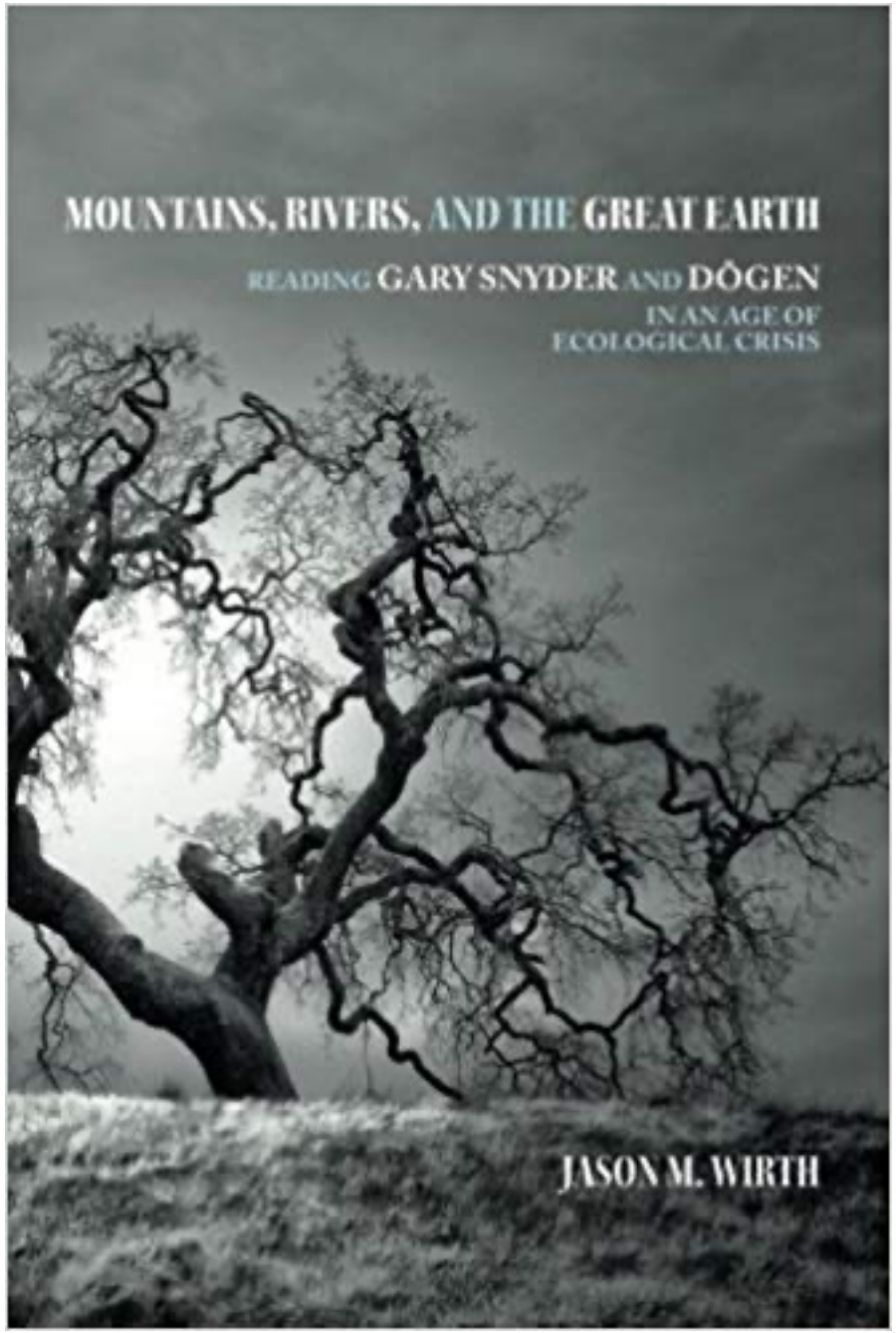
The Sun My Heart

Thich Nhat Hanh

One of the most important Zen masters today is the Vietnamese monk Thich Nhat Hanh (1926–). "The Sun My Heart" is a phrase Nhat Hanh has used in numerous writings to suggest the basic Buddhist teaching of interdependence. This teaching, which begins with the Buddha's teaching of *pratītyasamutpāda,* restated again in the Mahāyāna teaching of emptiness (*Śūnyatā*), is described by Nhat Hanh as "interbeing." Showing once again the influence of Daoism in Zen, Nhat Hanh draws many examples of "interbeing" in images from the natural world. Perhaps the most well-known example is when Nhat Hanh holds up a blank piece of paper and asks if one can see the cloud in the paper:

"If you are a poet, you will see clearly that there is a cloud floating in this sheet of paper. Without a cloud, there will be no rain; without rain, the trees cannot grow, and without trees, we cannot make paper. The cloud is essential for the paper to exist. If the cloud is not here, the sheet of paper cannot be here either. So we can say that the cloud and the paper *inter-are*. 'Interbeing' is a word that is not in the dictionary yet, but if we combine the prefix 'inter' with the verb 'to be,' we have a new verb, inter-be. Without a cloud, we cannot have paper, so we can say that the cloud and the sheet of paper inter-are."[1]




MOUNTAINS, RIVERS, AND THE GREAT EARTH
READING GARY SNYDER AND DÔGEN
IN AN AGE OF
ECOLOGICAL CRISIS
JASON M. WIRTH

ENCYCLICAL LETTER

LAUDATO SI'

OF THE HOLY FATHER

FRANCIS

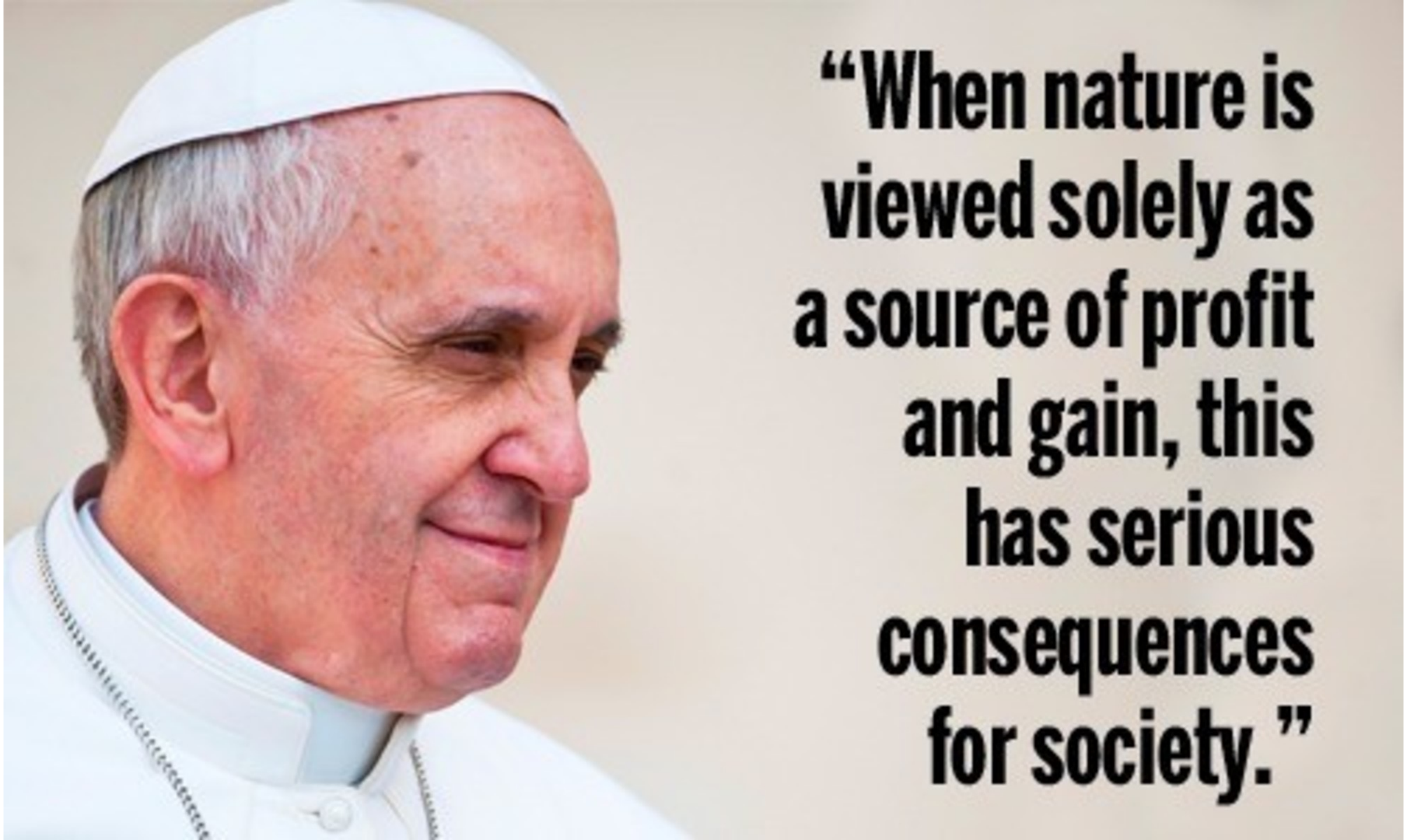
ON CARE FOR OUR COMMON HOME

1. "LAUDATO SI', mi' Signore" – "Praise be to you, my Lord". In the words of this beautiful canticle, Saint Francis of Assisi reminds us that our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us. "Praise be to you, my Lord, through our Sister, Mother Earth, who sustains and governs us, and who produces various fruit with coloured flowers and herbs".[1]

2. This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and masters, entitled to plunder her at will. The violence present in our hearts, wounded by sin, is also reflected in the symptoms of sickness evident in the soil, in the water, in the air and in all forms of life. This is why the earth herself, burdened and laid waste, is among the most abandoned and maltreated of our poor; she "groans in travail" (*Rom* 8:22). We have forgotten that we ourselves are dust of the earth (cf. *Gen* 2:7); our very bodies are made up

[1] *Canticle of the Creatures*, in *Francis of Assisi: Early Documents*, vol. 1, New York-London-Manila, 1999, 113-114.


CLIMATE DEAL
WITHDRAWAL
PBS


“When nature is viewed solely as a source of profit and gain, this has serious consequences for society.”

AUTHOR OF NO LOGO AND THE SHOCK DOCTRINE

NAOMI KLEIN

THIS CHANGES EVERYTHING

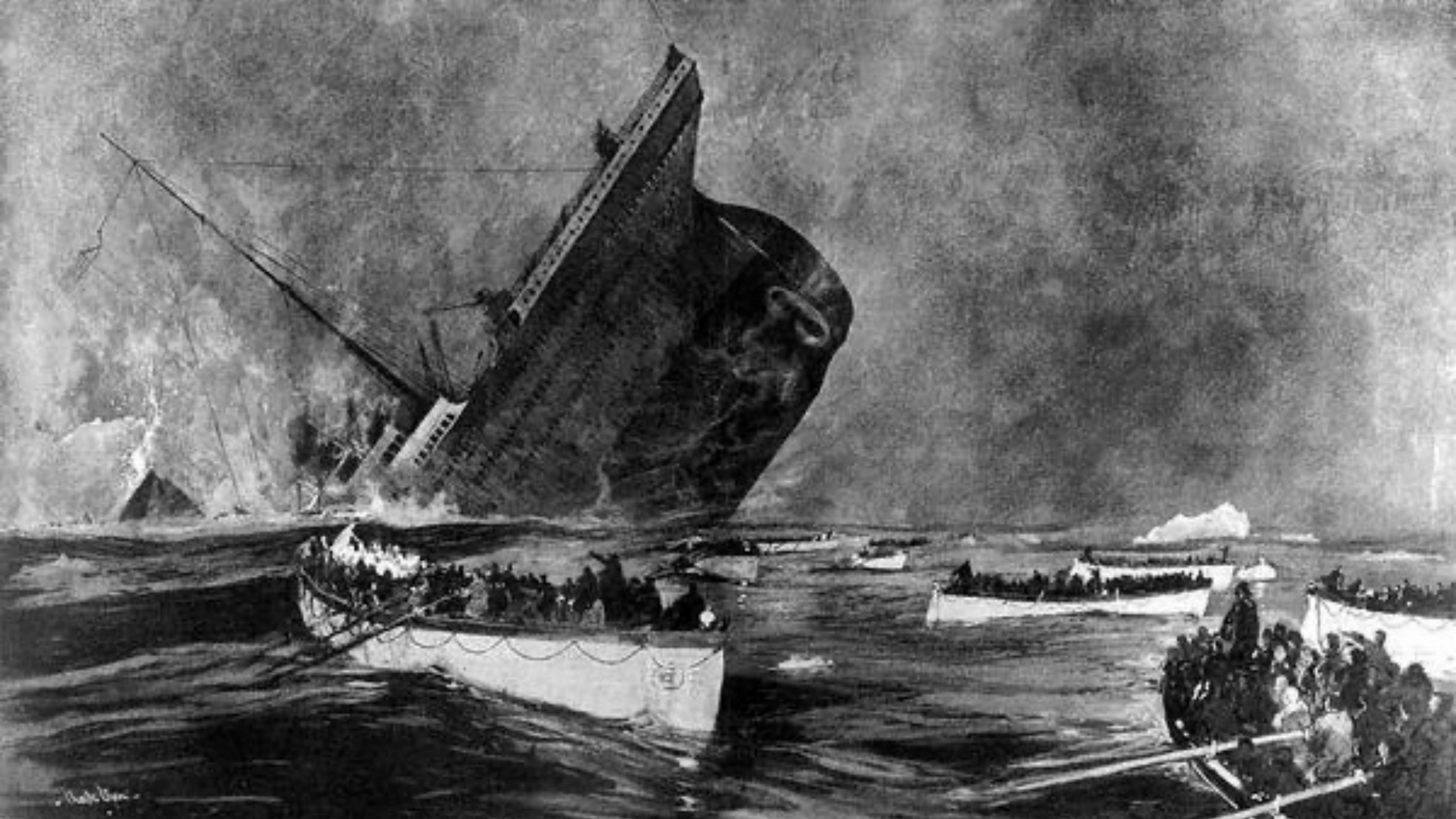
CAPITALISM VS THE CLIMATE

NAOMI KLEIN
THIS CHANGES EVERYTHING
CAPITALISM VS THE CLIMATE

THIS CHANGES EVERYTHING

“Anthropogenic climate change is really *Amerigenic* climate change.”

“There is no other society worldwide with such excessive consumption, waste, and greed for energy. Although the US American population constitutes less than five percent of the world population, it has produced more than a third of the cumulative greenhouse gas emissions of our species.”



“Our society is run by insane people for insane objectives. I think we're being run by maniacs for maniacal ends.”

John Lennon

BBC interview At The National Theatre, London, June 1968