

Global Climate Change

Mindsets and Narratives

Martin Baker

2026

- 1: Antarctic Narratives
- 2: GES Narratives
- 3: Science Narratives
- 4: Socio-Economic Narratives
- 5: Changing Mindsets

“The greatest enemy of truth is not the lie — deliberate, contrived, dishonest — but the myth — persistent, persuasive, unrealistic”.

JFK, 1962

A QUESTION FOR EVERYONE

The Global Warming Debate:

- CO_2 not actually increasing
- CO_2 increasing but no warming
- real, but only a “giant natural fluctuation” (GNF)
- anthropogenic...but not a problem
- actually, it's good for us
- serious, but not a threat: “overshoot—adapt--recover”
- an existential crisis...



1. Antarctic Narratives



- 1972-1976 Cambridge student: maths/physics
- 1976-1986 BAS: atmospheric sciences
- 1986-1989 C.C.A.T. lecturer: meteorology/climatology
- 1989-2016 Loretto School (+science consultancy work)
- 2018 Nat. Geo. guest: return to Antarctica







The Global Environment System

ATMOSPHERE

HYDROSPHERE

CRYOSPHERE

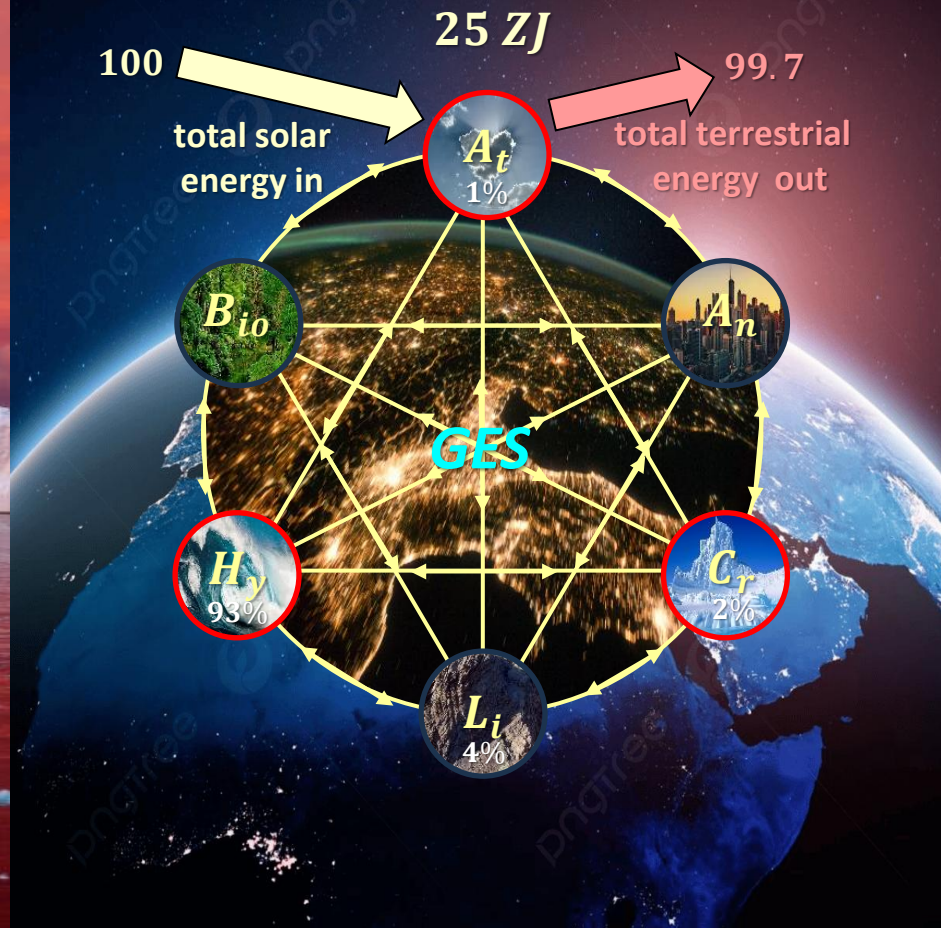
LITHOSPHERE

BIOSPHERE

ANTHROSPHERE

$1 \text{ ZJ} = 1,000,000,000,000,000,000 \text{ J}$

The ZettaJoule Energy Gap



GES

Cryosphere Atmosphere Hydrosphere

1994-2024:

Greenland ice loss ~ 5.8Tt

Arctic sea ice loss ~ 10.6 Tt

Antarctic ice loss ~ 12.4Tt

Antarctic sea ice loss ~ 1.3 Tt

global montane ice loss: ~ 8.6Tt

Total ice loss ~ 40Tt

Slater T. et al., Cryosphere, 15, 233-246, 2021

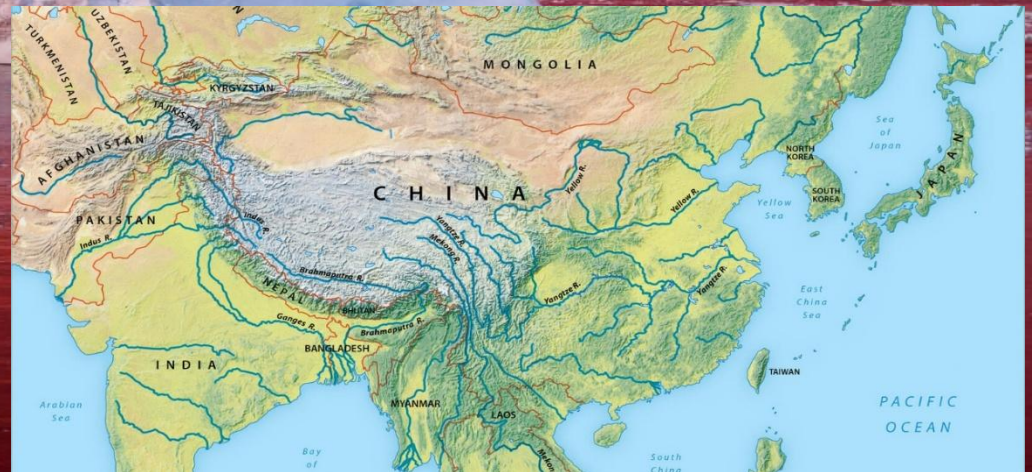
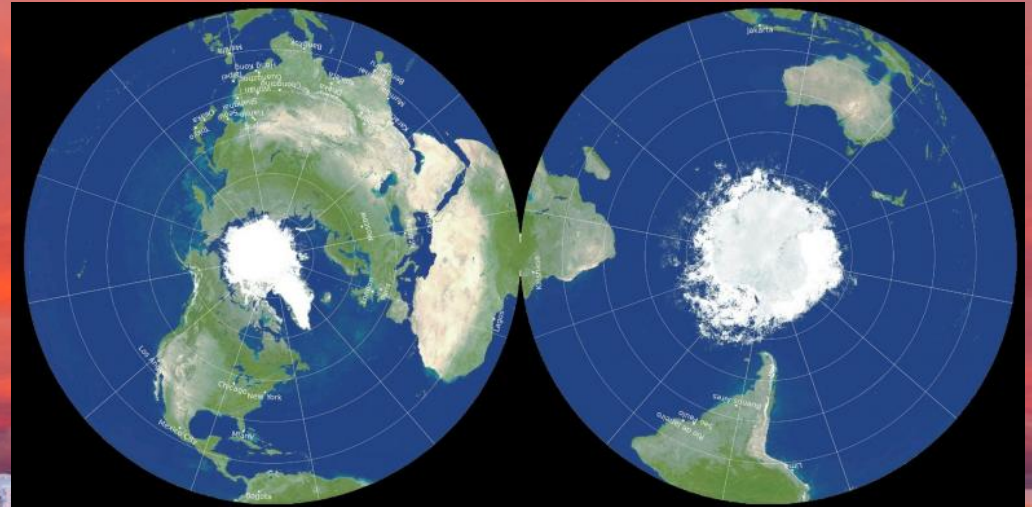
(would cover whole UK to a depth of 190m)

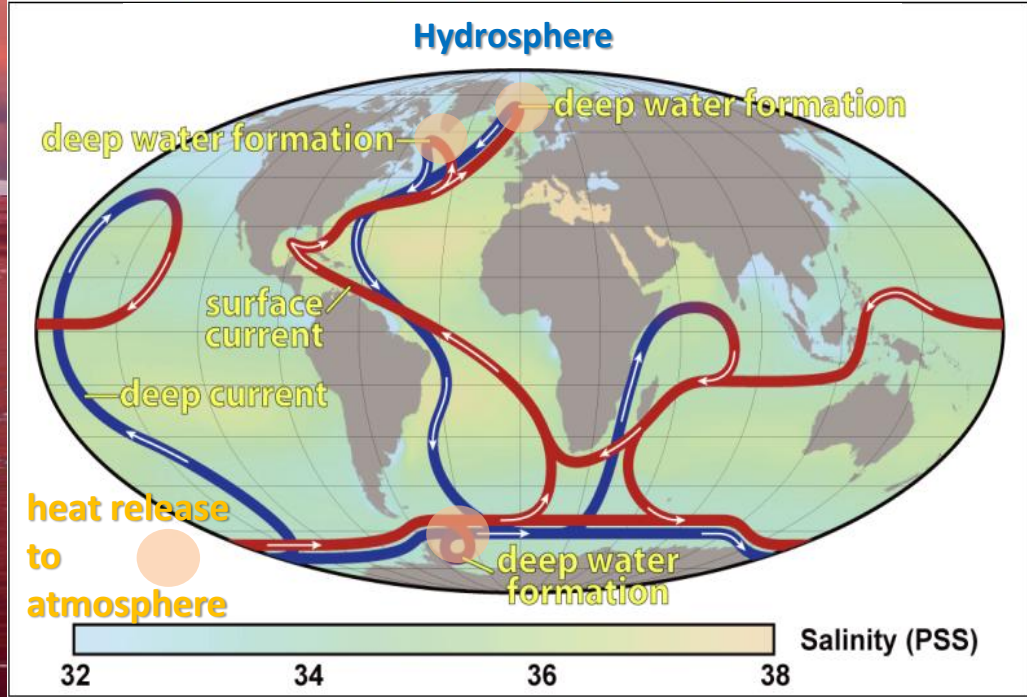
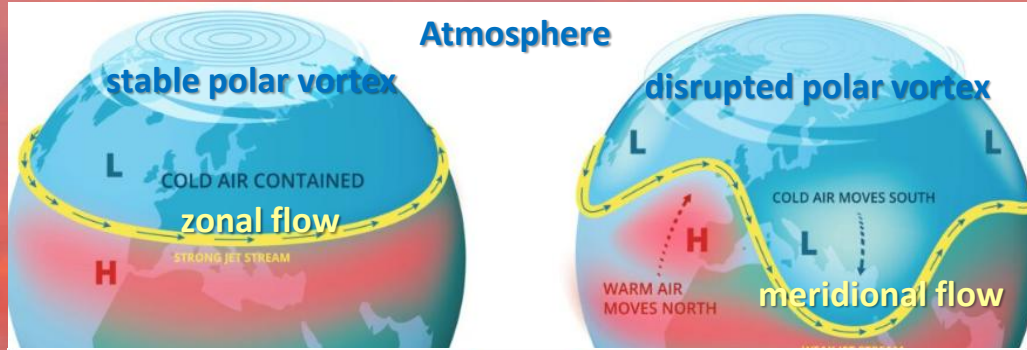
**ESTIMATED CRYOSPHERE ICE LOSS
CAUSAL MECHANISMS**

68% due to atmospheric heating

32% due to oceanic heating

Cryosphere





Earth Energy Imbalance -- $25ZJ$ pa

Where has all the extra thermal energy from global warming gone?

1% atmosphere
 1850 – 2025: $\Delta T \sim 1.5^\circ C$

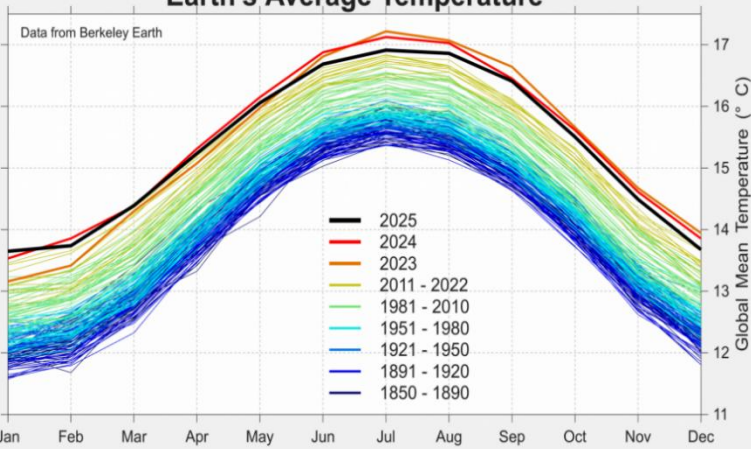
6% cryosphere and lithosphere

93% oceans
 ~7 Hiroshima bombs per second
 1850 – 2025: $\Delta T \sim 0.9^\circ C$

GES thermodynamically unbalanced:
 it's heating up

Earth's Average Temperature

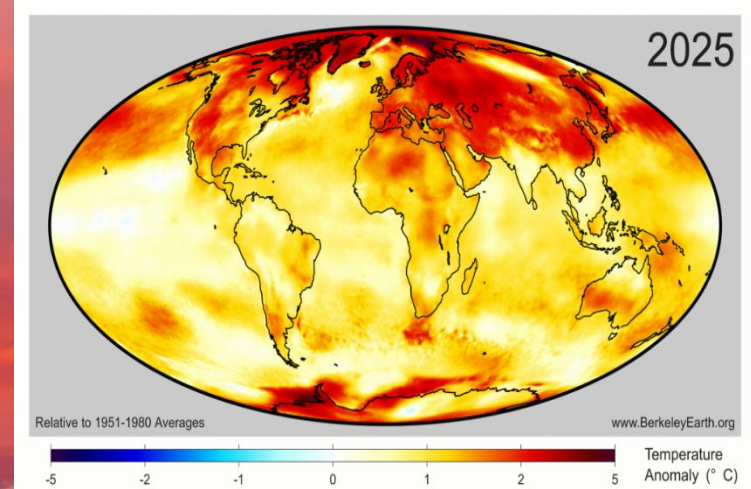
Data from Berkeley Earth



2014—2025: the
11 warmest
years on record

...but...

climate
extremes are
hidden



The Worst Climate Event in the 21st c?



June 26 2021:
3 days of record
temperatures
begin

June 29: 49.6 °C

June 30 :
destroyed by
wildfires in
20 min

“...climate models do an excellent job on global averages, but as far as predicting extreme events, things are actually much worse than our worst-case analysis. For decades people called scientists “alarmists”. In the future that’s going to end up being a really sad commentary on inaction.”

Andrew Dessler 2021

A Rapidly Changing GES

Atmosphere

- $\Delta T \sim 3.0 \text{ }^\circ\text{C}$ by 2080?
- warmest 11 yrs on record
- NH polar jet-stream disruption
- “whiplash” weather extremes $\uparrow\uparrow$

Hydrosphere

- exceptional ocean heat storage
- AMOC circulation disruption
- growing ocean acidification
- el Nino disruption/amplification

Cryosphere

- cryosphere collapse?
- 0 Arctic summer sea-ice by 2040?

Biosphere

- coral reef destruction
- rapidly expanding arid zones
- global ecosystem/biodiversity collapse?

Anthrosphere

- 90 companies \Rightarrow 65% emissions since 1850
- accelerating global food system fragility
- widespread growing water shortages
- seasonal lethal heat stress \sim 2.7 billion people
- $\geq 1.5m$ sea level rise inevitable?
- climate niche exclusion \Rightarrow human migration increase
- societal collapse?

GES

- *Is this all a “Giant Natural Fluctuation” (GNF)?*

Fairy Tales

- just a GNF
- all an alarmist hoax
- time on our side

Realities

- 99.97% certain not a GNF
- crisis formed in single generation
- a single generation to solve it

3. Science Narratives

Is this all a GNF?

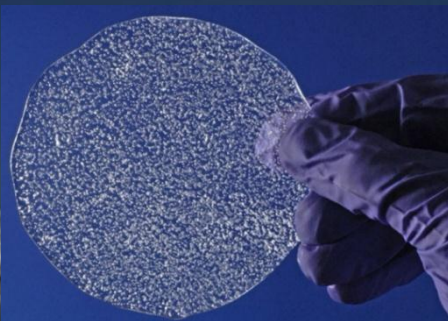
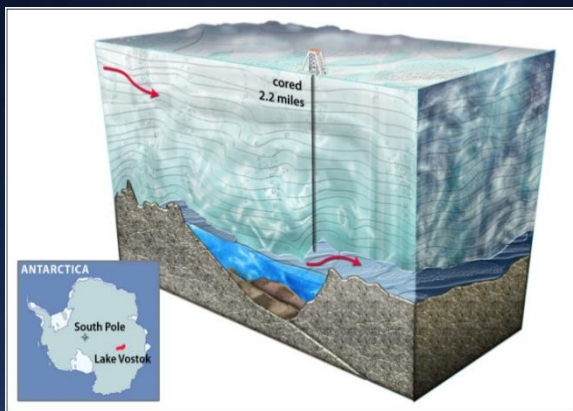
Multiscale De-trended Fluctuation Analysis (MSDFA)

Weather, Macroweather, and the Climate

Our Random Yet Predictable Atmosphere

SHAUN LOVEJOY

Where do we get the data from?



⇒ calculation of probabilities of fluctuation events of given spatial magnitude and timescale

Results

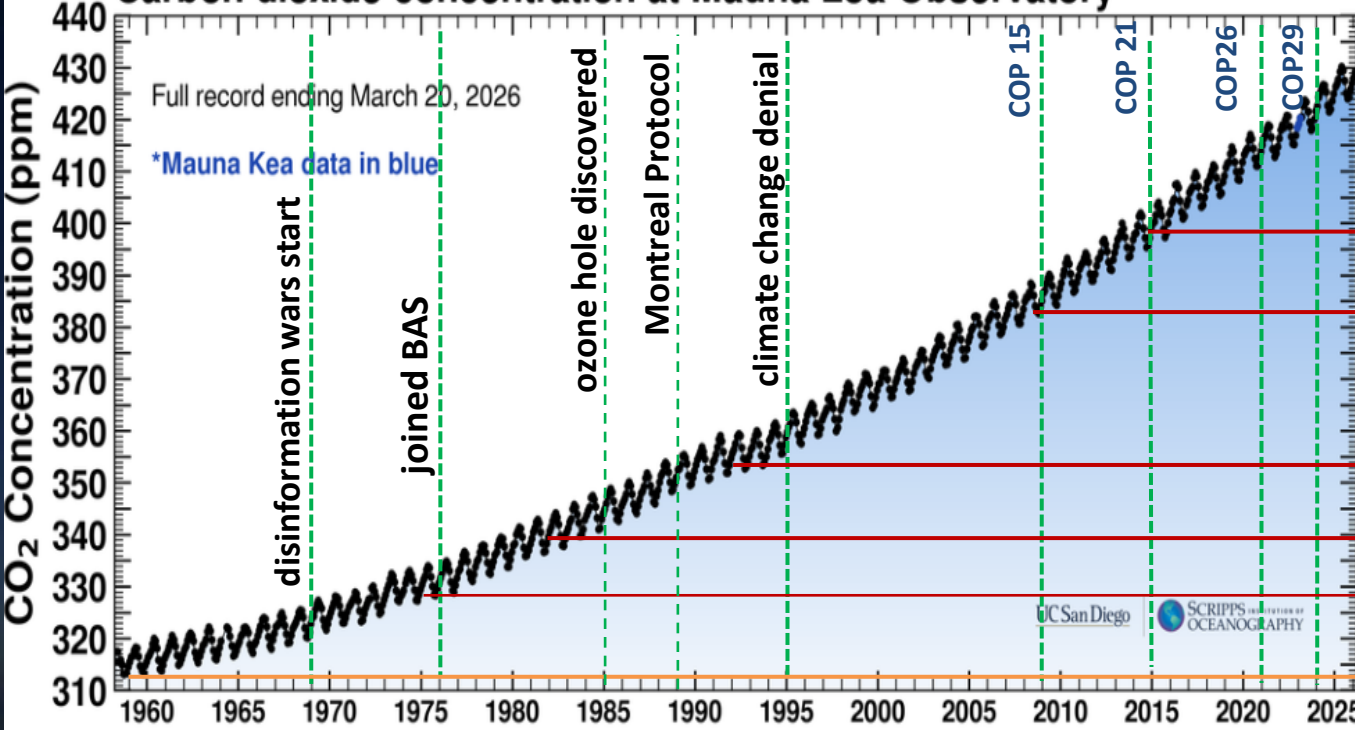
- * pre-industrial fluctuation statistics very different from post-industrial statistics
- * gives a detailed taxonomy of all climate anomalies
- * resultant *pdfs* are non-Gaussian
- * ⇒ significant “black swan” events
- * ⇒ $\text{Prob}(\text{GNF}) \sim \frac{1}{3000}$

CONCLUSION

99.97% certain current global warming not a GNF

70 Years of Atmospheric CO₂ Concentrations

Carbon dioxide concentration at Mauna Loa Observatory*



14/04/26: 431 ppm
global pop: 8.2 billion

existential threat identified

growing public alarm

vested interest lobbying

science/scientists under attack

disinformation accelerates

first evidence published?

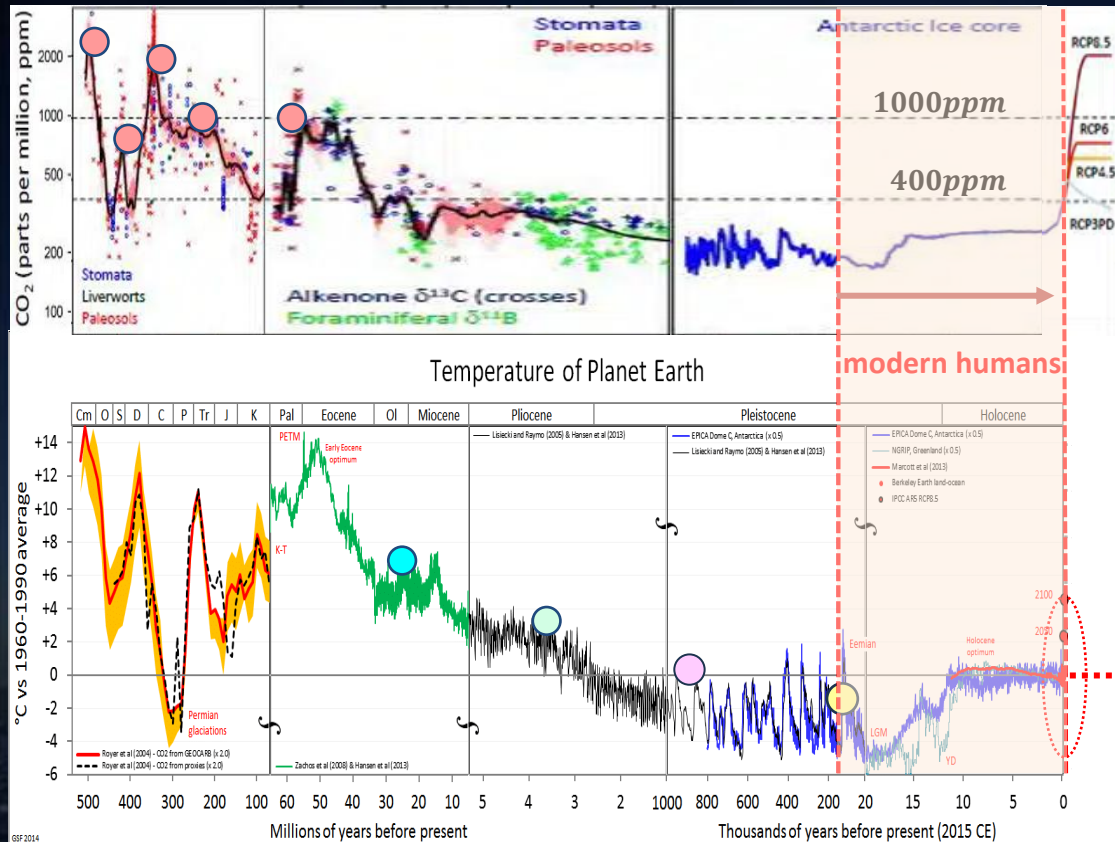
strong theory, minimal evidence

1970-2020: crisis creation in a single generation
2020-2070: crisis solution in a single generation

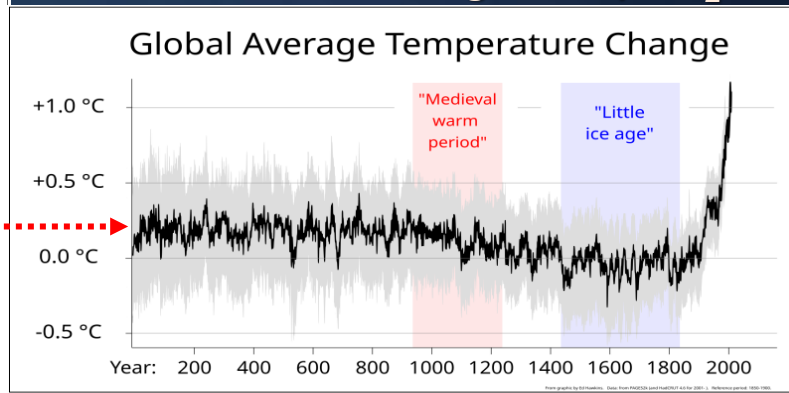
27/05/53: 313 ppm
global pop: 2.8 billion

Global atmospheric CO_2 and ΔT °C walk hand in hand across 500 million years...

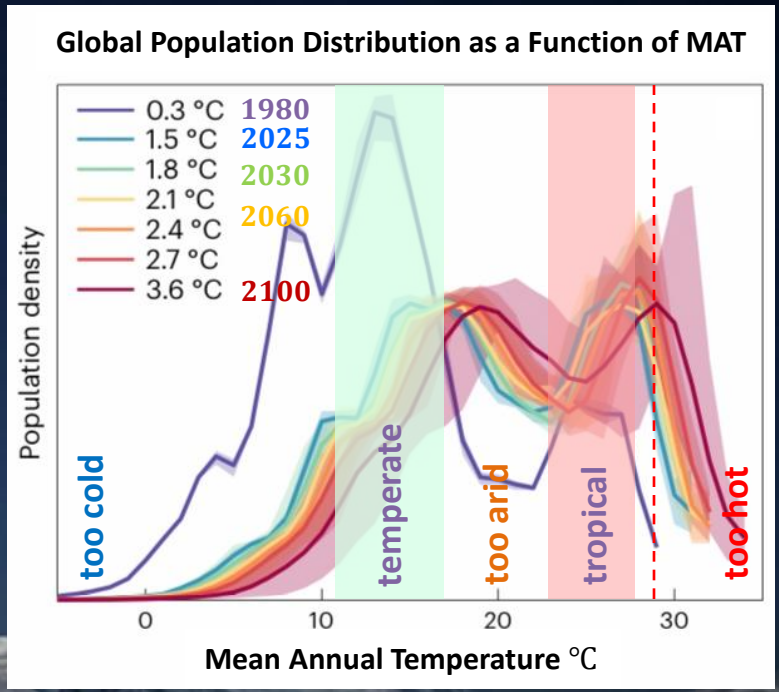
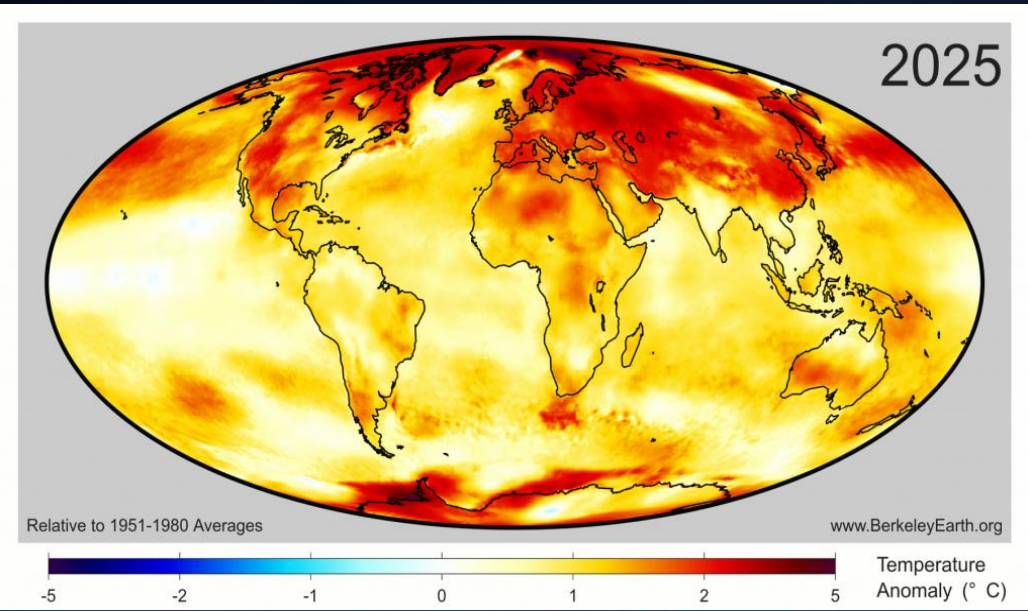
- massive extinction level CO_2 events
- current CO_2 \uparrow rate $\sim 10x$ higher
- Antarctic ice sheets start forming
- Pliocene warming $\Delta T \geq 3.0^\circ C$
- sea levels $\sim 10m$ higher
- NH ice ages commence
- Out of Africa
- sea levels $\sim 70m$ lower



real crisis: rate of change of $\Delta T / CO_2$...



We are good at predicting averages. We are not good at predicting extremes. We always underestimate.



Average $\Delta T^{\circ}\text{C}$ anomalies

- 2025 global: +1.5°C
- 2025 land: +2.9°C
- 2025 Arctic: +4.9°C
- 2025 WA: +4.9°C

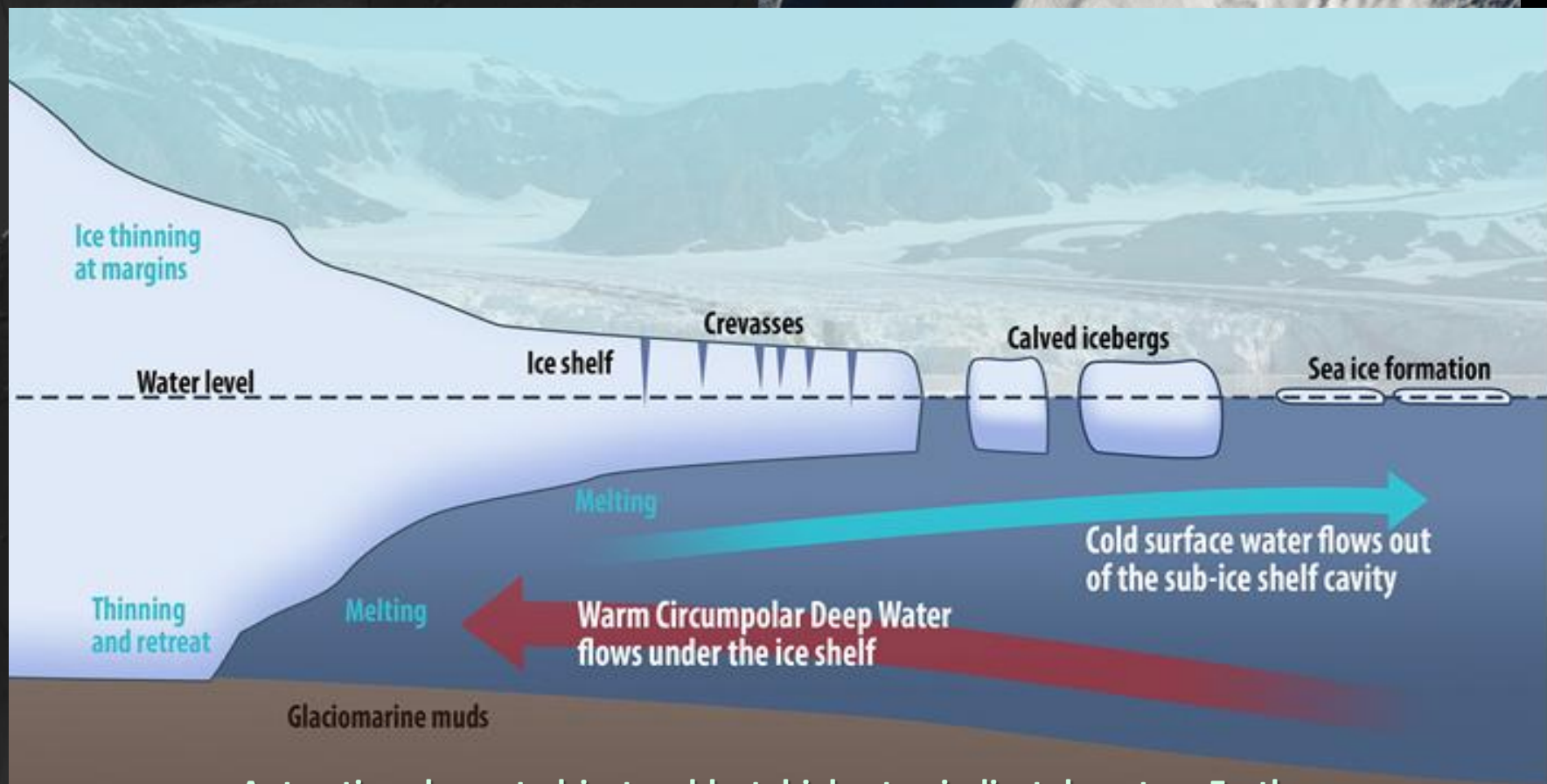
Extremes

- 2021 BC: +34.6°C
- 2022 Antarctic: +39.1°C
- 2024 Arctic: +22.7°C
- 2025 Iceland: +23.8°C

The Human Climate Niche

adapted from: Lenton T., Xu C. et al. (2023)

climate niche exclusion: ~800 million by 2080?



Antarctica: largest, driest, coldest, highest, windiest desert on Earth

Is a 5m+ global sea level rise now unavoidable?

Projected sea level rise (metres)

Mountain glacier disappearance

0.4

Ocean thermal expansion

2°C 0.5 4°C 1.0

West Antarctic Icesheet (already doomed?) 3.6

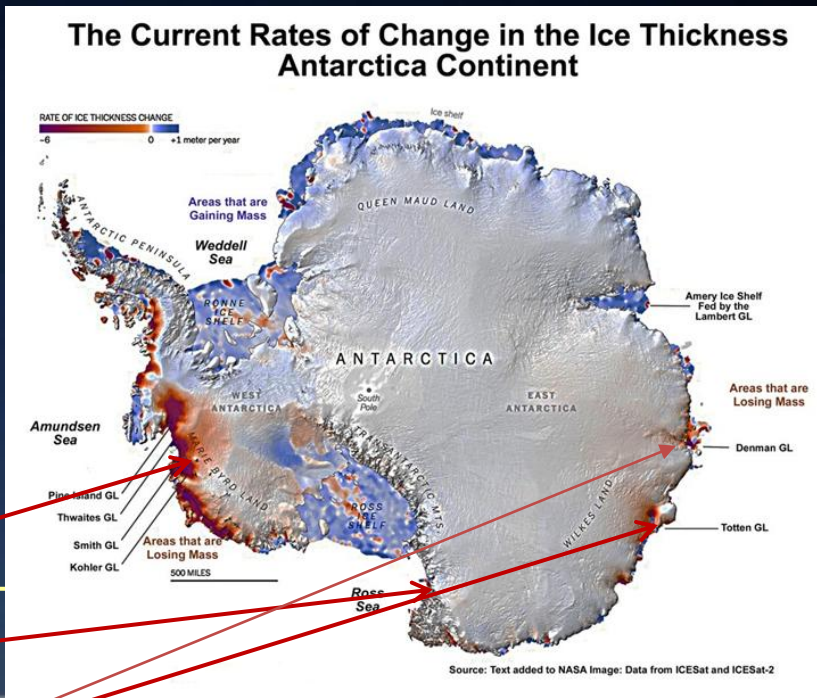
Wilkes Basin (near to irreversible loss of ice plug) 3.5

Aurora Basin/ Totten Glacier/Denman Glacier 5.1

best case 1.2 m by 2100 worst case 2.5 m by 2100
 3.8 m by 2200 9.7 m by 2200

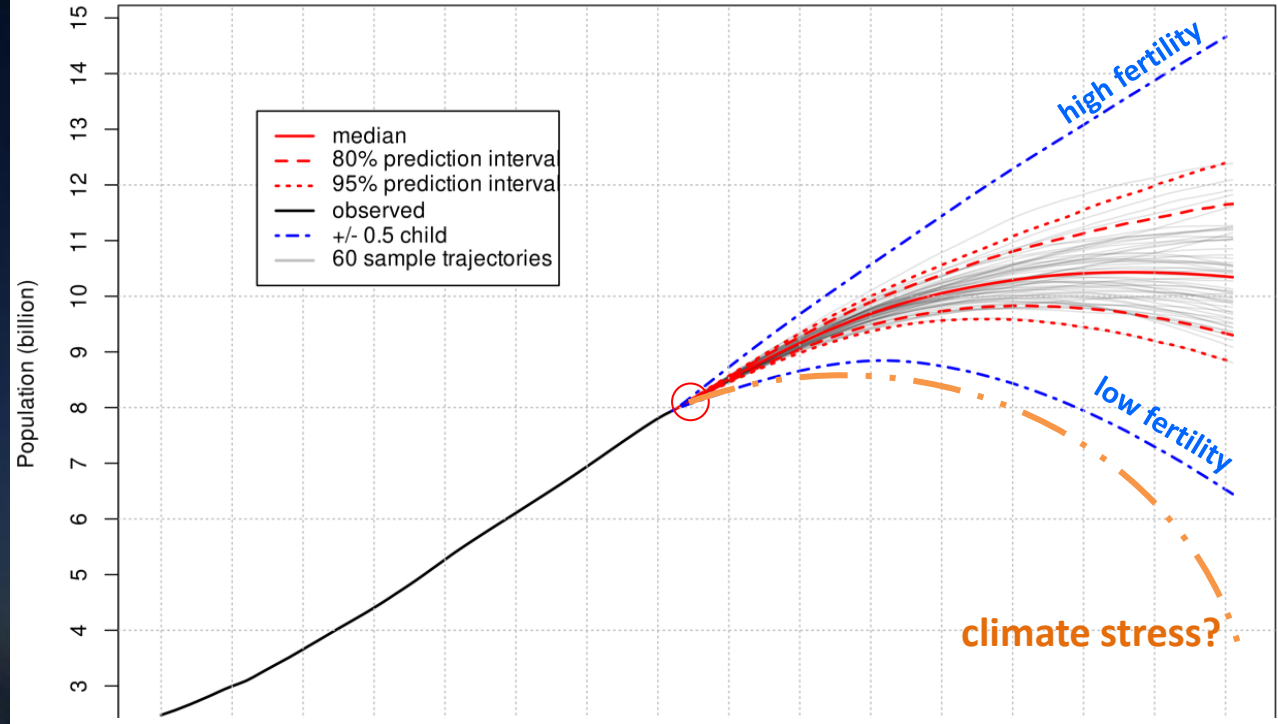
above 1900 levels I. Joughin et. al., I.P.C.C. 2022

1 cm of sea level rise ⇒ ~ 2 million people displaced from low-lying homelands



4. Socio-economic Narratives

Global Population Projections



“Recklessly destroying the environment can undoubtedly be said to constitute murder, extermination or other inhumane acts under Article 7 of the Rome Statute.”

Franziska Kring (2016)

Extreme Weather

2050	2100
All of us	All of us

Rising Sea Levels

2050	2100
350 million	2.2 billion

Fresh Water Loss

2050	2100
1.2 billion	2.5 billion

Heat Stress

2050	2100
2.7 billion	4.0 billion

Forced Migration

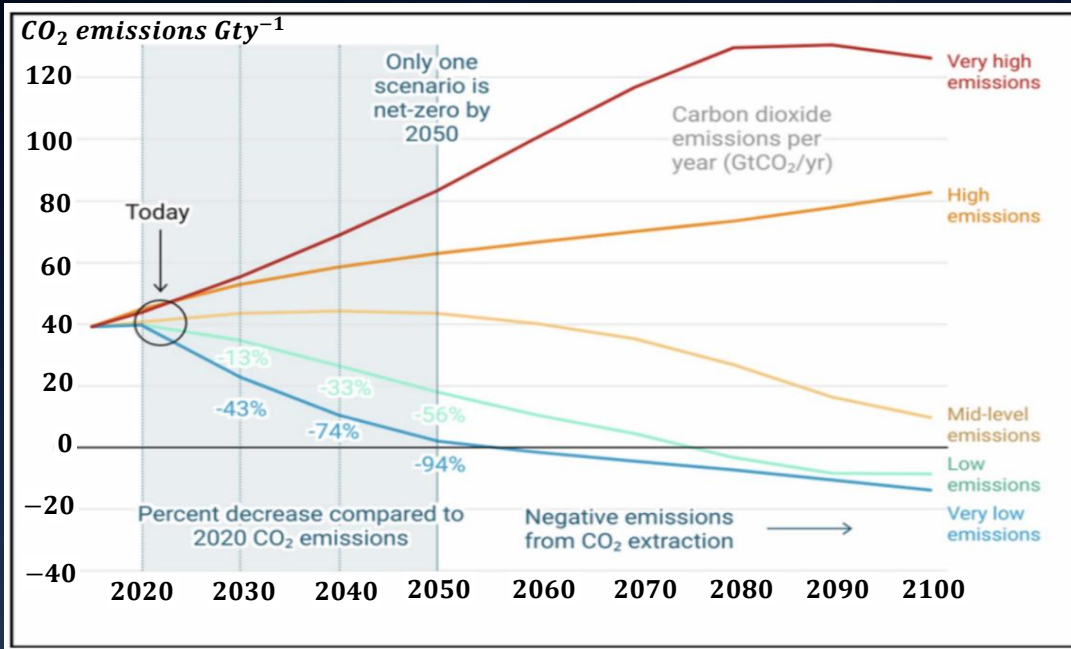
2050	2100
700 million	2.5 billion

climate stress? :

Are We There Yet? A Long Road Towards Net Zero...

1 Gt \equiv 1,000,000,000 tonnes

1 Tt \equiv 1,000,000,000,000 tonnes



- 2000-2025: global emissions \uparrow by over 50%: more CO₂ emitted since 1991 than in the rest of human history
- global emissions currently \uparrow \sim 1.1% p.a
- 2.0°C “line in sand” \Rightarrow 3.0 Tt
- cumulative CO₂ emissions 1850-2025: \sim 2.6 Tt

% changes 2000-2025

UK: - 45
 USA: - 27
 EU: - 31
 China: +225
 India: +160

Mind the Carbon Budget Gap

1.5°C \leq 100 Gt
 2.0°C \leq 400 Gt
 2.5°C \leq 700 Gt
 3.0°C \leq 1000 Gt

Business as Usual projected benchmarks

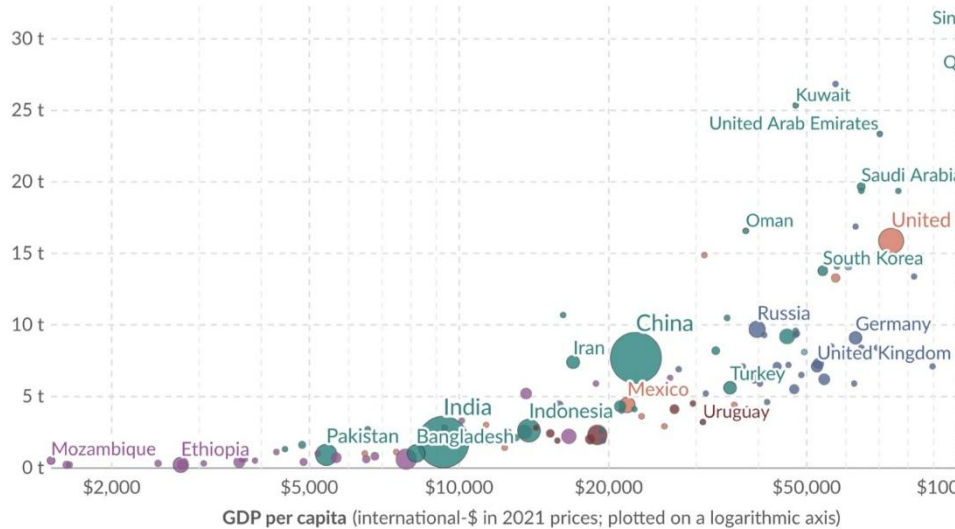
ΔT	best	mid	worst
1.5 °C	—	—	now
2.0 °C	2060	2050	2040
2.5 °C	2080	2070	2060
3.0 °C	—	2100	2080

Why can't we get carbon emissions under control?

Consumption-based CO₂ emissions per capita vs. GDP per capita

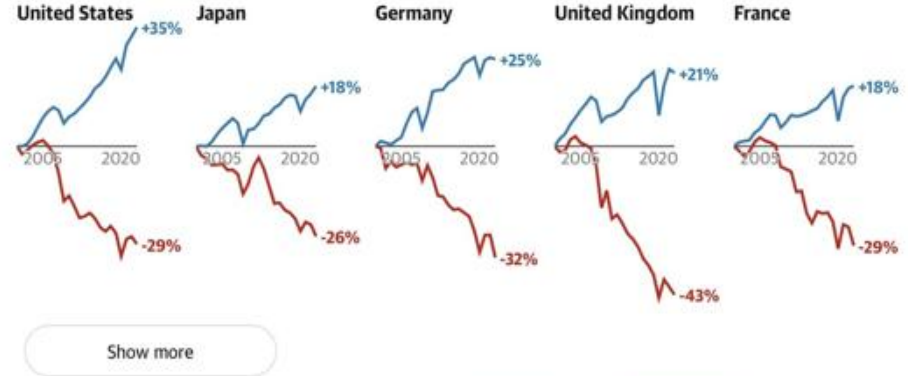
Consumption-based emissions¹ are measured in tonnes per person. They are territorial emissions minus emissions embedded in exports, plus emissions embedded in imports. GDP per capita is adjusted for differences in living costs between countries.

Consumption-based emissions per capita (tonnes per person)

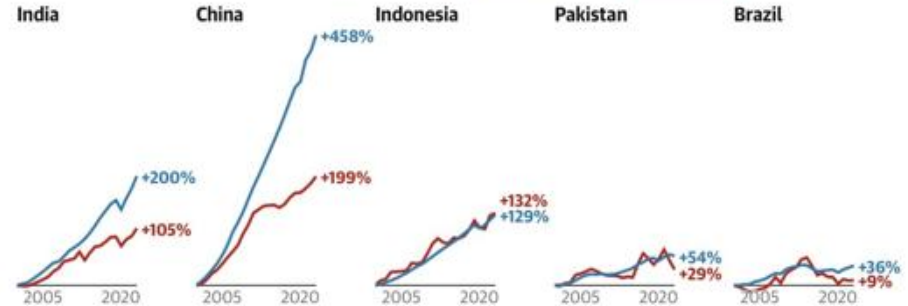


Data source: Global Carbon Budget (2025); Population based on various sources (2024); Eurostat, OECD, IMF, and V
Note: GDP per capita is expressed in international-\$² at 2021 prices.
OurWorldinData.org/co2-and-greenhouse-gas-emissions | CC BY

Countries that have decoupled growth from emissions



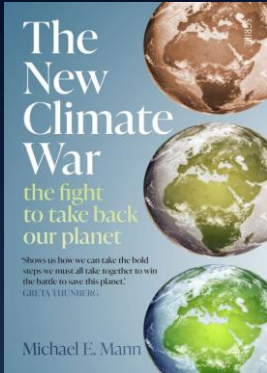
Countries that have not fully decoupled growth from emissions



GDP growth and emissions are inextricably intertwined: *GDP* = cuckoo in the nest...



Climate Wars



climate scientists
environmentalists
activists

mega-corporations
financial institutions
elite/super-elite groups

almost all agree:
climate change
= existential risk

almost all agree:
climate change mitigation
= existential risk

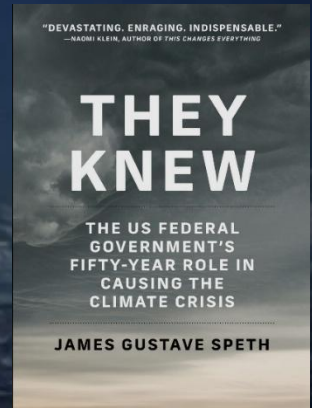
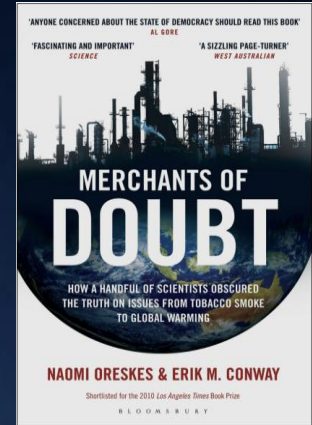
“doubt is our primary product”

1960--: denial

- incentivise oil/gas addiction
- lobbying: “alternative facts”
- “both sides now”
- data cherry-picking
- shoot message/messenger
- “woke” and “hoax” theories
- toxic nostalgia for “good old days”

2015--: non-denial, but...

- about users--not providers
- governments—not corporations
- create legal causation linkage fog
- challenge scientific impartiality
- greenwashing

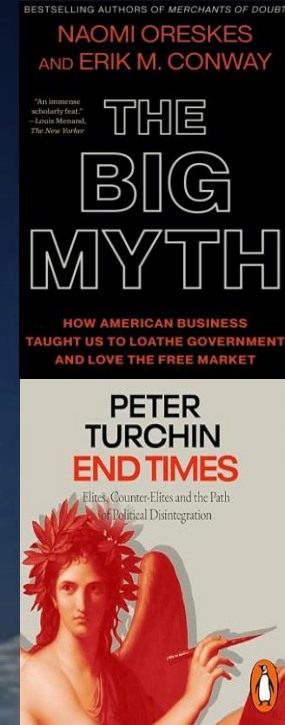


Climate disinformation has turned a problem into a crisis in a single generation: unchecked, it will turn a crisis into a catastrophe in another generation.

Climate Change: Symptom of a Deeper Malaise

The Real Problem

- economists taught models rooted in 1950s textbooks and 1850s theories: *market values different from social values*
- free-market fundamentalism: *climate change is a failure of the Market*
- “*Big Business is better than Big Government*”: a myth that the common good is best served by “*the rational pursuit of self-interest*”
- *GDP* \equiv “*cuckoo in the nest*”: \Rightarrow unconstrained growth and the illusion of ∞ resources / 0 negative consequences
- total absence of any genuine socio-economic “*plan B*”
- complete failure to link environmental / human well-being
- explosion of vested interest influences protecting free-market status quo: the “*greed is good*” mantra



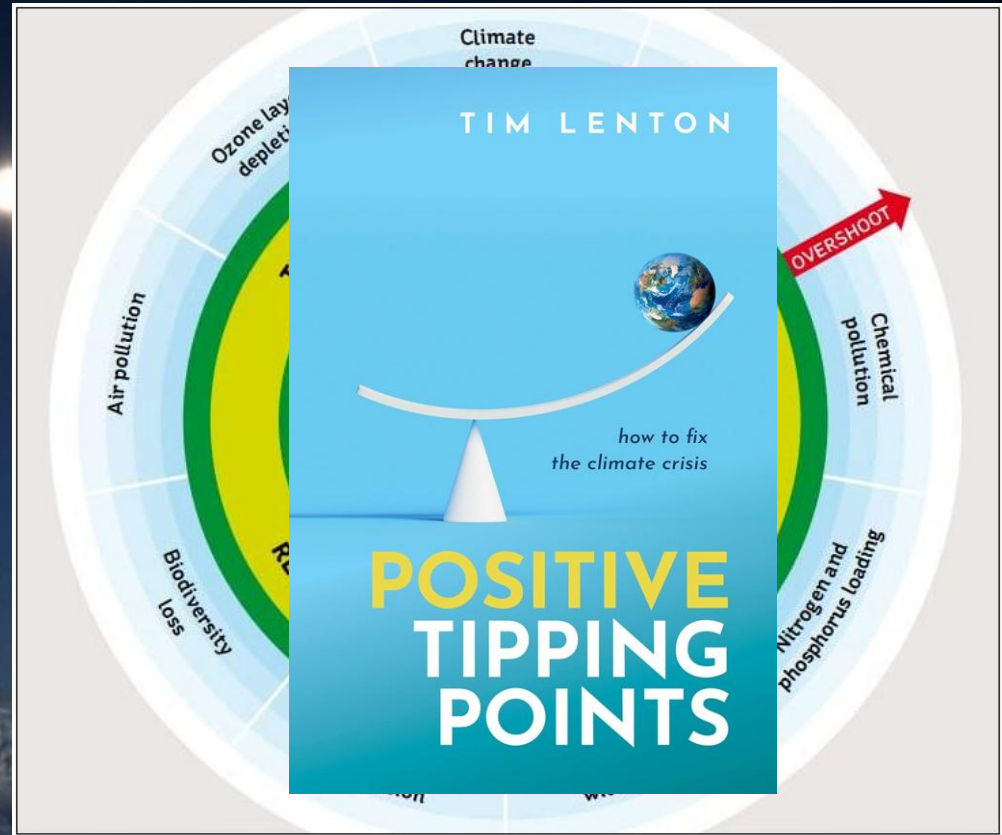
cliodynamics:

a

“science of history”

SOLUTIONS: Reinventing the World?

- Science is a process, not an event: scientific uncertainty \neq uncertain science!
- reject climate disinformation propaganda
- “democratise” and rebalance global economic principles in line with the GES
- move focus away from planetary peril to those responsible: view extreme wealth as a socio-economic disease
- prioritise basic universal needs \Rightarrow broader-based social strategies
- focus on positive tipping points
- embrace change: avoid “toxic nostalgia”



universal basic incomes—debt cancellation—extreme wealth tax

biosphere



mass extinction

atmosphere



extreme macroweather events

anthrosphere



collapsing infrastructure

Global warming is not some form of manageable planetary diabetes: it is a cancer that needs to be caught and cured early, before it metastasises out of control.

cryosphere



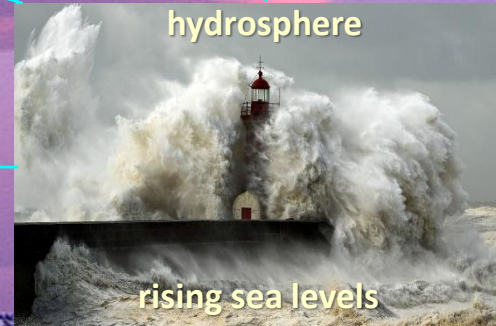
global ice loss

lithosphere



growing aridity zones

hydrosphere



rising sea levels

deniers

sceptics

lukewarmers

techno-optimists

climate scientists

o.a.r.s

alarmers

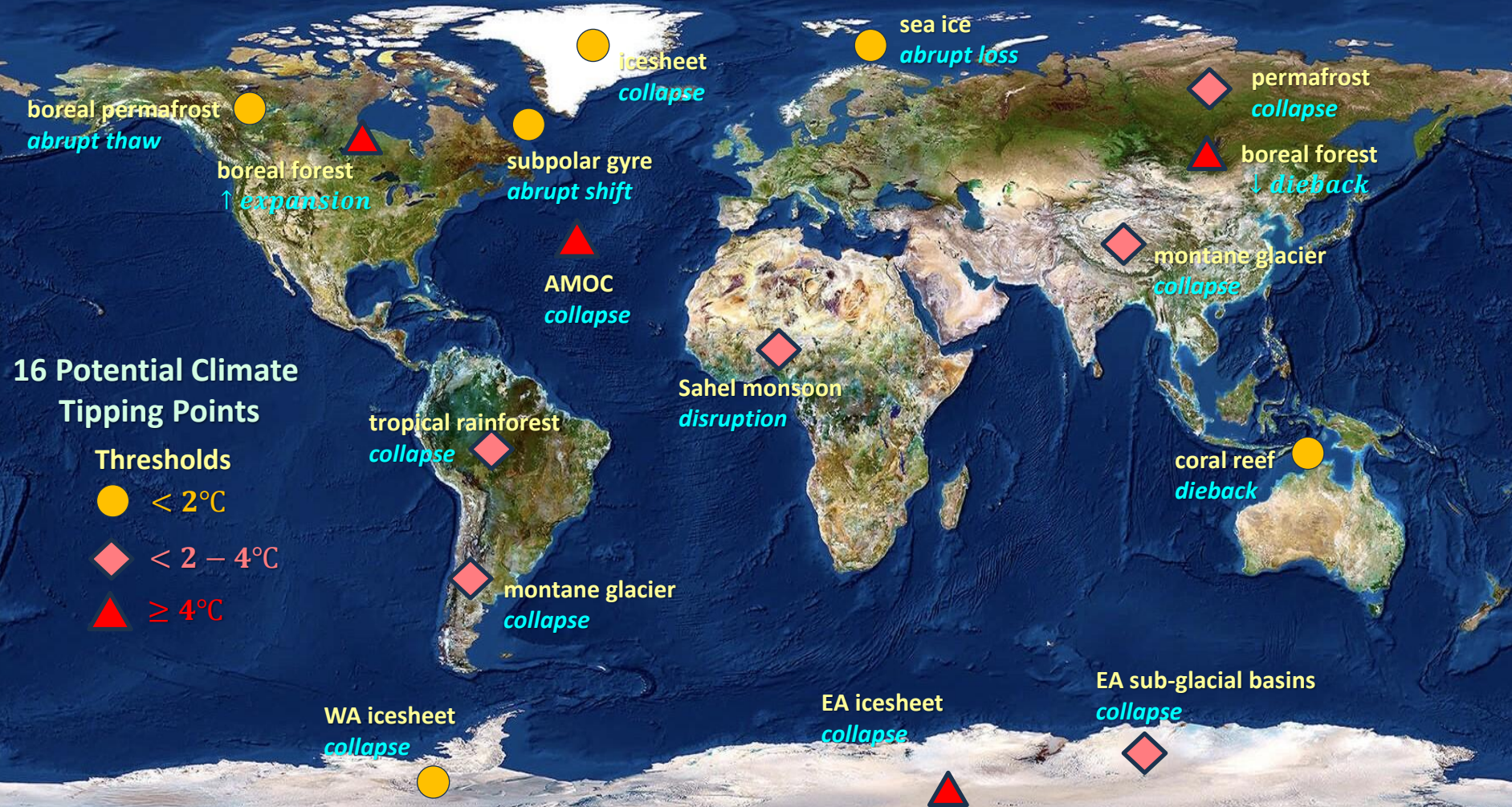
doomers



16 Potential Climate Tipping Points

Thresholds

- $< 2^{\circ}\text{C}$
- ◆ $< 2 - 4^{\circ}\text{C}$
- ▲ $\geq 4^{\circ}\text{C}$



The Skilling Grid

All experimentally verified classical and quantum physics

Known knows

Things we collectively understand and agree on, which we can model and use for accurate predictions/outcomes.

All accepted scientific and technological standards and procedures. The basis of common knowledge.

Known unknowns

Things known to exist but not fully understand, involving either quantifiable or unquantifiable uncertainties.

Most academic research! The driving force of modern science.

Gaps in the Standard Model of Elementary Particle Physics. Dark Matter and dark energy

Modelling concept of ecosystem diversity using Category Theory

Unknown knows

Things we don't realise we know or understand, perhaps buried in our subconscious or unjustifiably dismissed as irrelevant because of ideological bias or prejudice. Others might know, if only we listen to them!

Antidote: promote teamwork and multidisciplinary, and acceptance of other people's ideas. Question all assumptions!

Unknown unknowns

Unanticipated and unforeseen information gaps, involving either genuine ignorance, perception limitations or subjective biases. Often a consequence of a failure of imagination. Possibly also due to ingrained complacency.

Sometimes rooted in psychology (the Johari Window).

Antidote: thinking outside the box, taking nothing for granted, challenging convention

Unanticipated consequences of quantum—gravitation unification