Klimakrise als ethische Herausforderung

Lukas Kenner

STEIERMARK
THEMA DES TAGES

DARUM MACHEN WIR ES ZUM THEMA
Das ewige Eis am Dach der Steiermark schmilzt immer schneller. Durch den Klimawandel ist nun das Skifahren am Dachstein nicht mehr möglich – die Liftstützen müssten neuerlich versetzt werden, wirtschaftlich rechnet sich das längst nicht mehr. Das Aus für den Wintersport bedeutet das aber (noch) nicht.

steirer@kronenzeitung.at

Georg Bliem zeigt es: Der Rosmariestollen (siehe Pfeil) war vor 40 Jahren noch bündig mit dem Gletscher.

Das Ende der Eiszeit am Dach

Die Auswirkungen des Klimawandels sind auch am Dachstein längst nicht mehr wegzuleugnen. Um bis zu sechs Meter schmolz die Eisdecke allein im heurigen Sommer. Der Skibetrieb am Hymnenberg ist somit Geschichte.

Der heurige Sommer setzte dem ewigen Eis am Dach der Steirer noch stärker zu als in der Vergangenheit. Der Hallstätter Gletscher verlor sechs Prozent seines

Fünf Herausforderungen für ethisches Handeln

1. Grundrechtsbegriffe

2. Verantwortung gegenüber zukünftigen Generationen

3. Globale Dimension

4. Glaubwürdigkeitskrise

5. Unterentwickelte theoretische Basiskonzepte

Fünf Herausforderungen für ethisches Handeln

1. Grundrechtsbegriffe:
Menschenwürde <-> Menschenrechte

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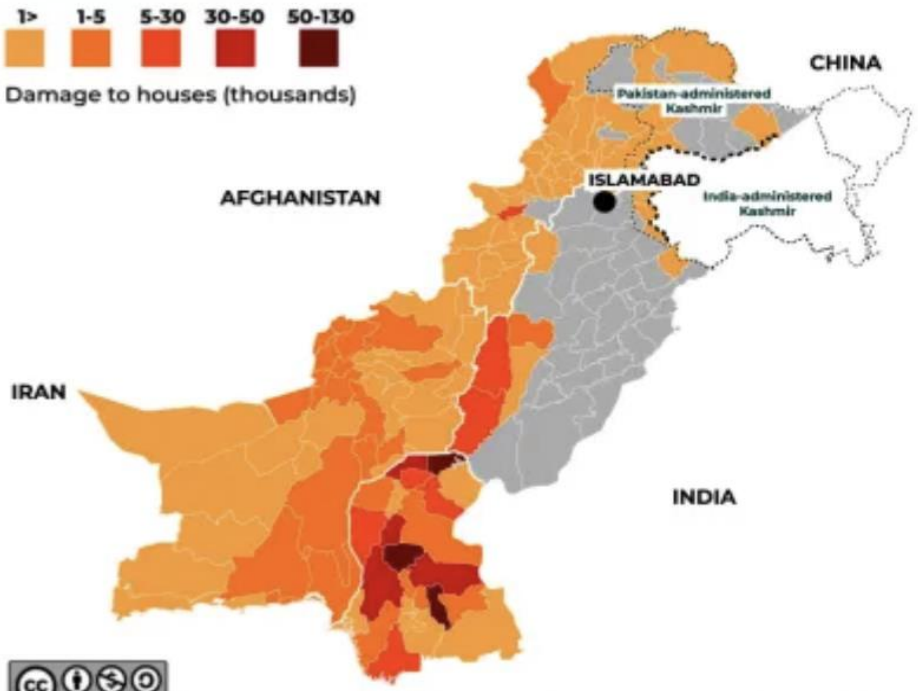


According to the NDMA as of September 5, 2022:

DEATHS
1,325

INJURED
12,703

ROADS DESTROYED
5,735km

BRIDGES DESTROYED
246

HOUSES DESTROYED
1,688,005

LIVESTOCK DEATHS
750,481

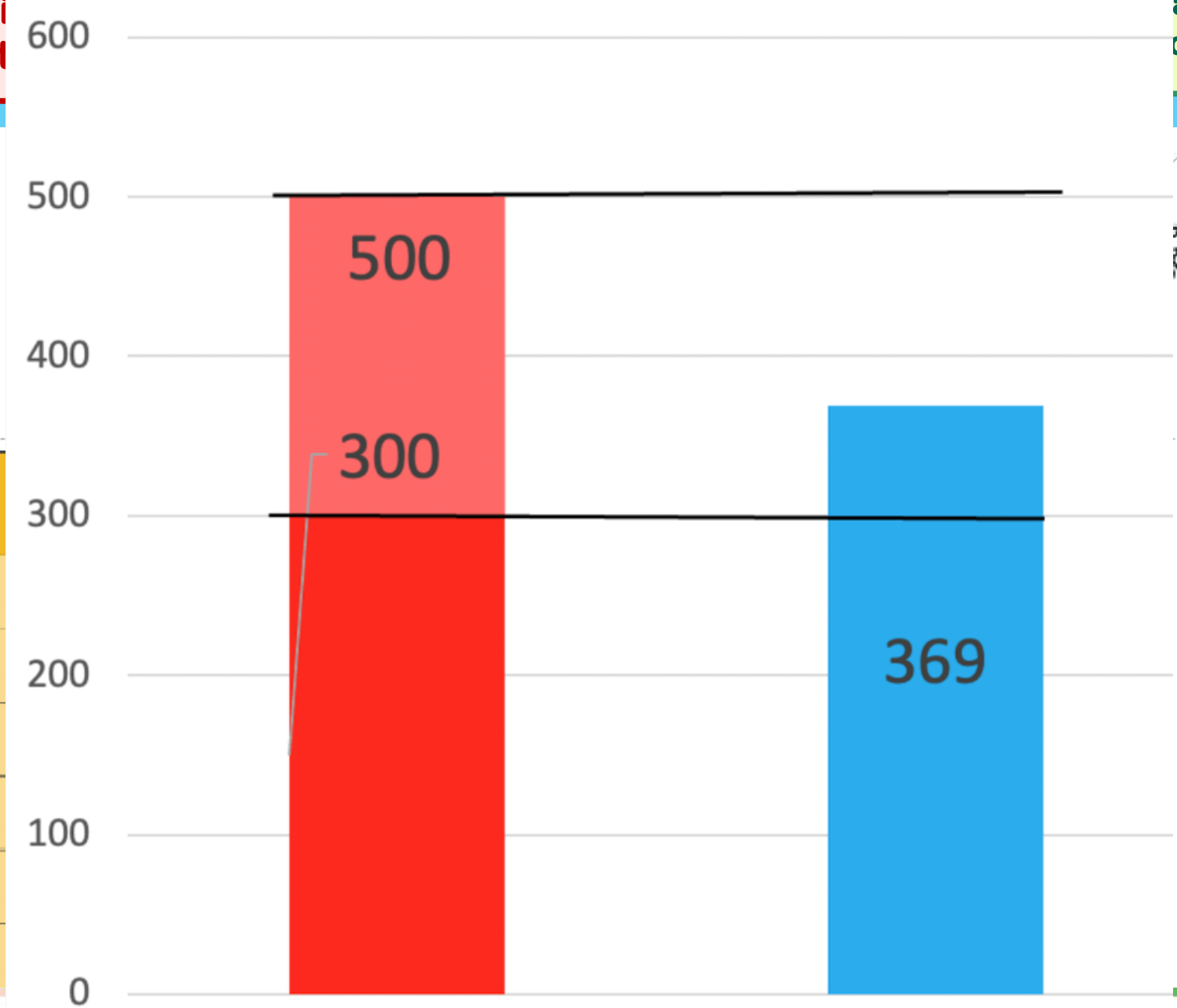
@AJLabs ALJAZEERA

Dringli
keit

andlungs-
optionen

Klimafolgen

Hitztetote 2023 vs Verkehrstote 2022 in 🇦🇹



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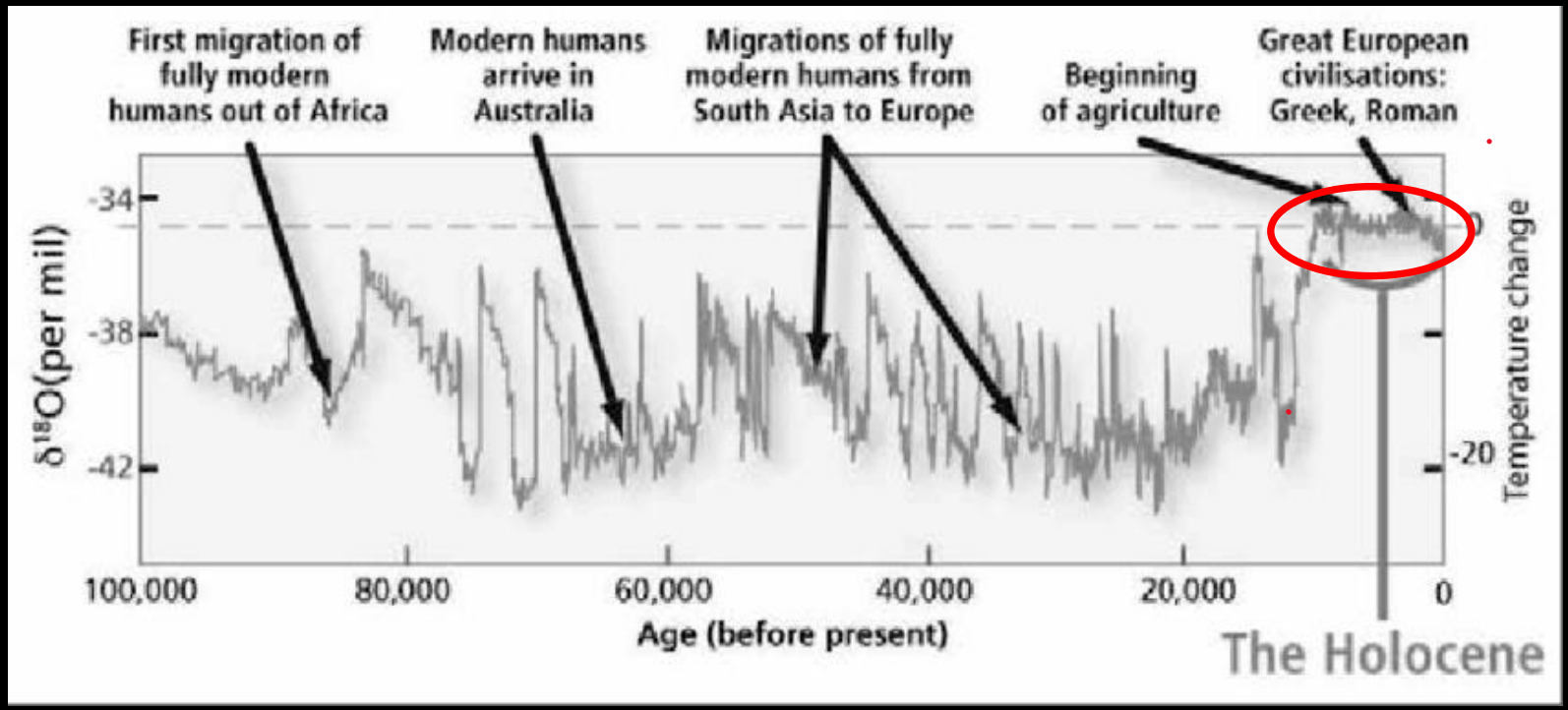
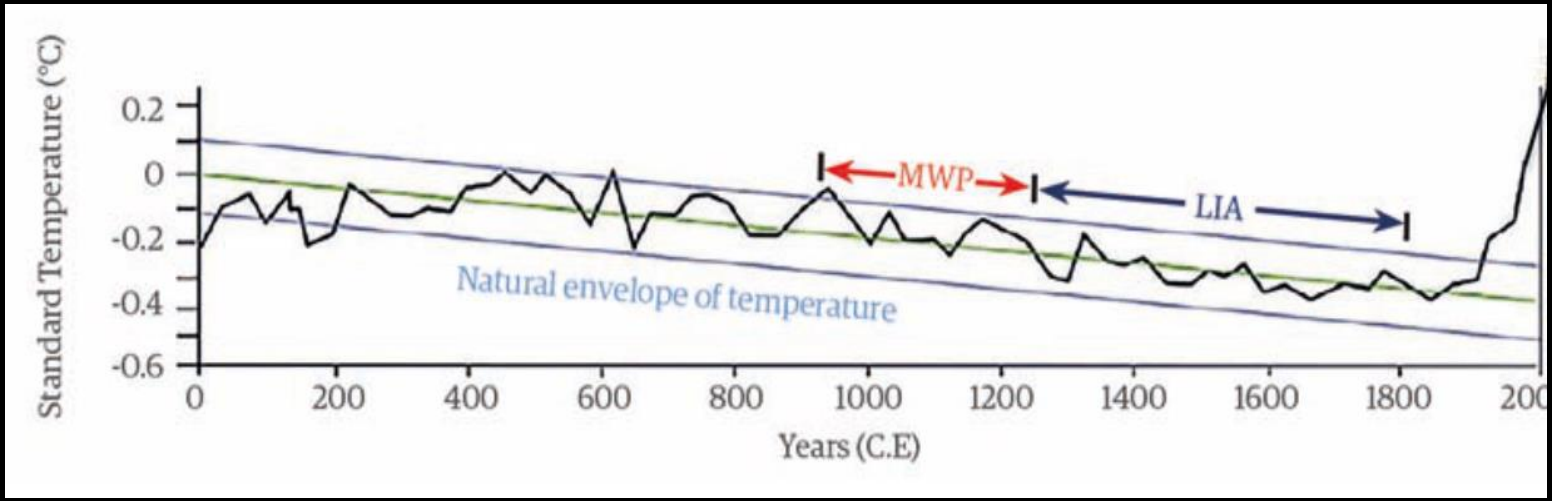
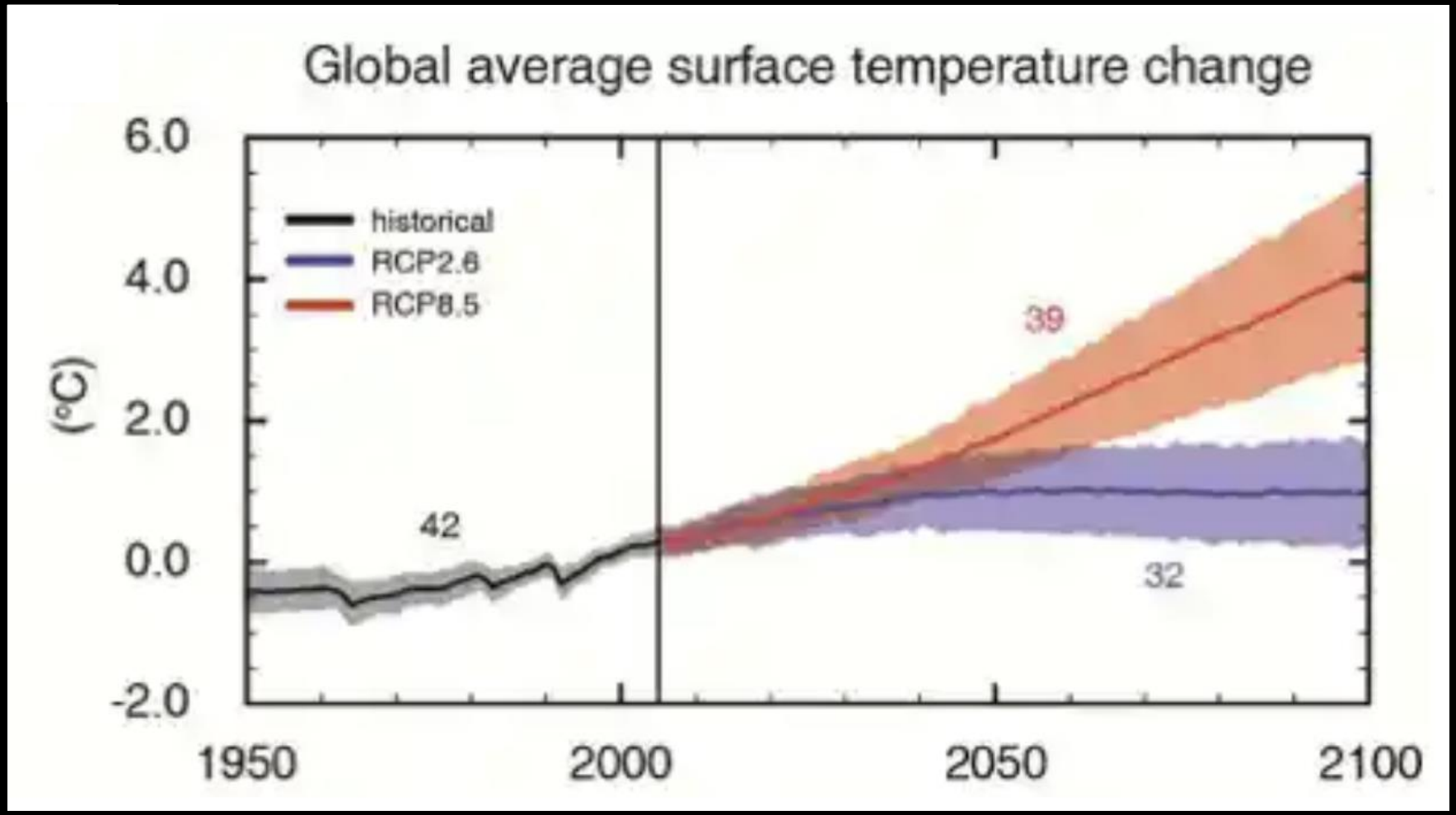
Menschliche Entwicklung
Earth System Dynamics



Temperature Rise:
Beyond the envelope of natural Variability



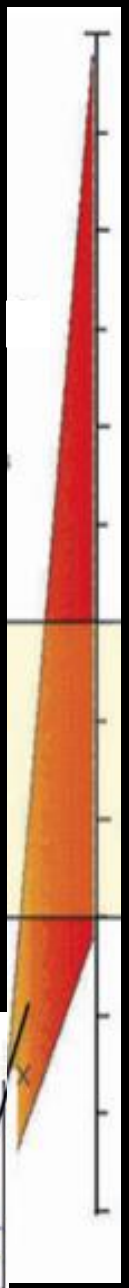
IPPC temperature projections



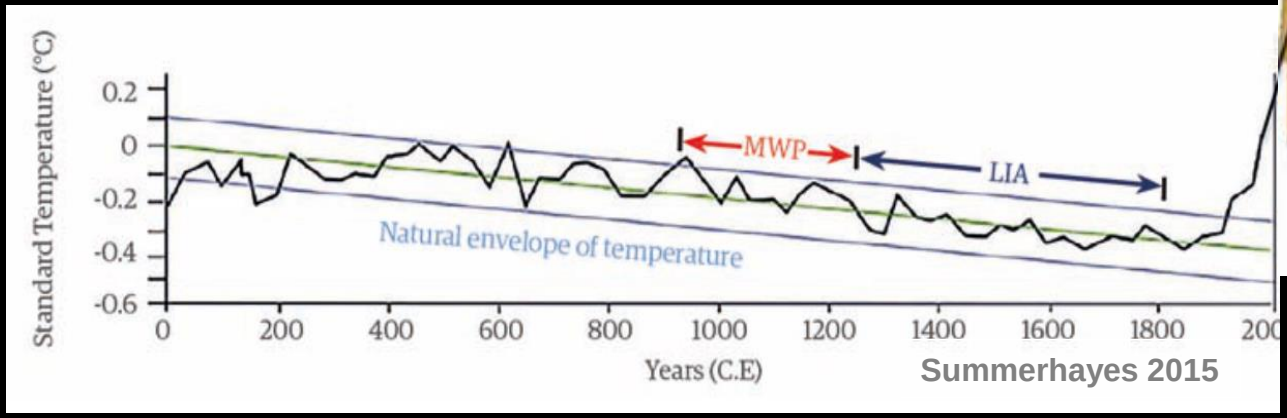
IPCC Report 2013

Earth system moves to a new state?
Severe challenge to contemorary civilisation.
Possible collapse?

committed



IPCC projections 2100 AD



Summerhayes 2015

Rates of Climate Change

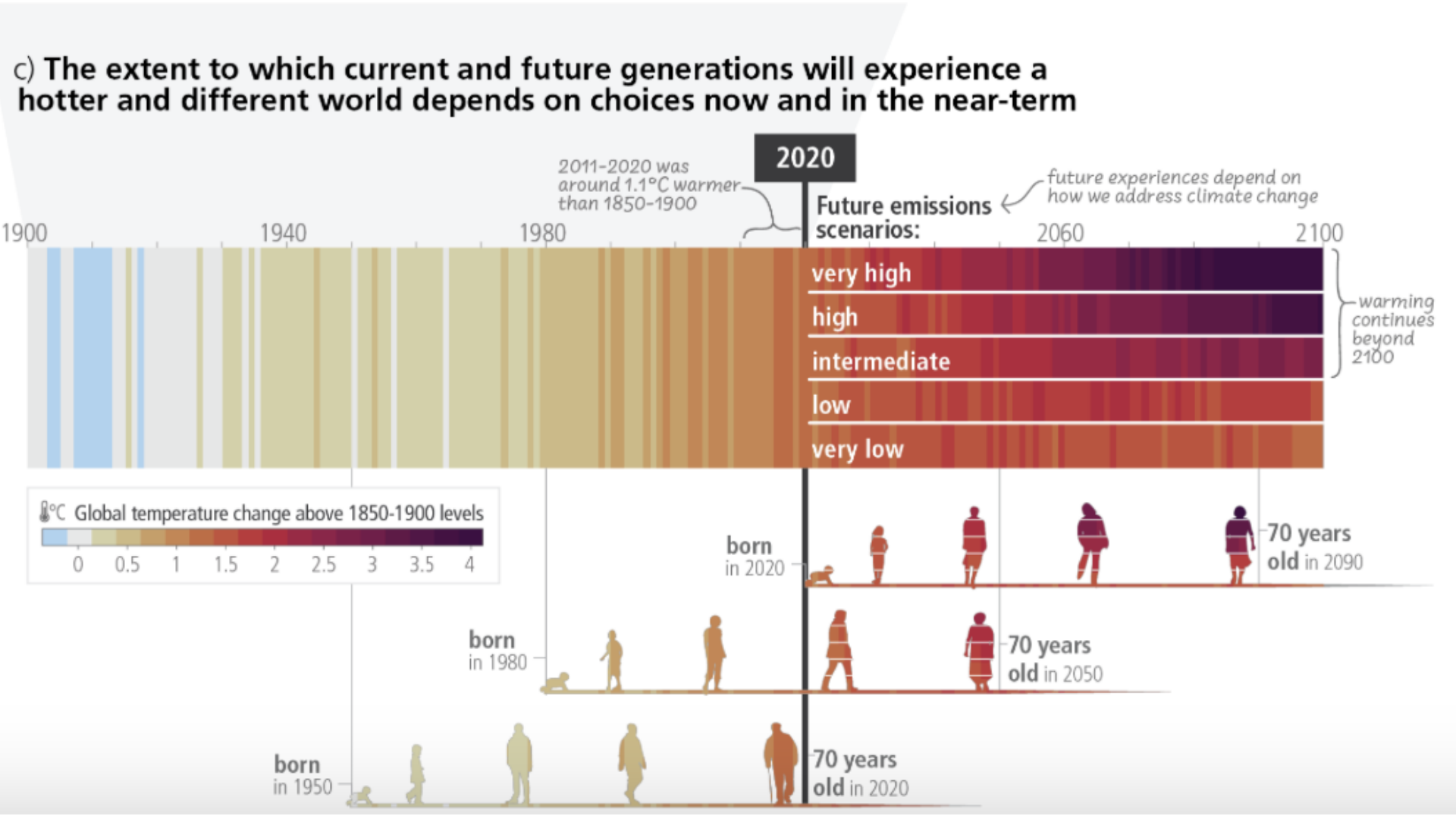
Die Geschwindigkeit des atmosphärischen CO2 -Anstiegs in den letzten zwei Jahrzehnten ist etwa 100-mal so hoch wie die maximale Geschwindigkeit während der letzten Deglazialisierung.

Seit 1970 ist die globale Durchschnittstemperatur um das 170-fache der Hintergrundrate der letzten 7.000 Jahre des Holozäns gestiegen, und zwar in entgegengesetzter Richtung.

Das Tempo der Versauerung der Ozeane ist zumindest in den letzten 300 Millionen Jahren beispiellos.

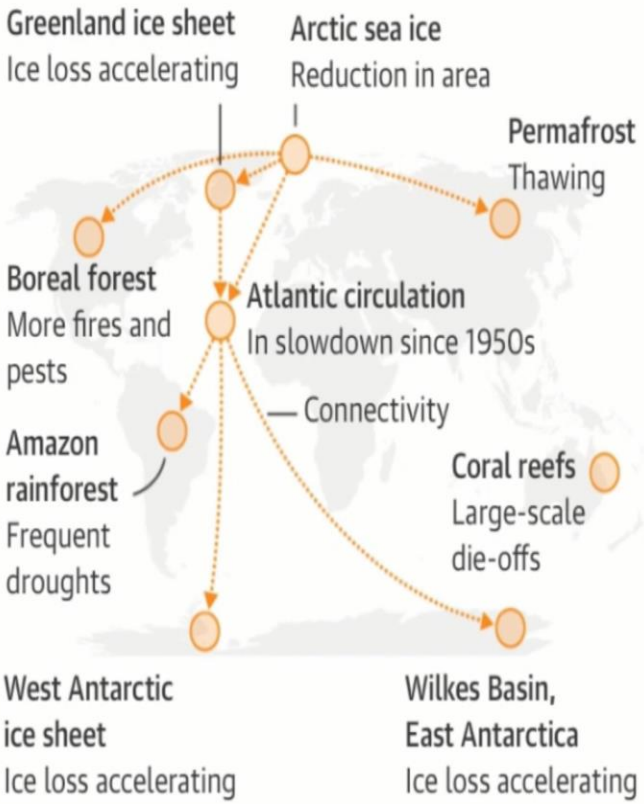
De Vos et al. 2014: Wolf 2011; Marcott et al. 2013; NOAA 2016; Canfield et al. 2010

IPCC 2023 Assesment Report (AR)



IPCC 2023 AR fig 1

Scientists' warning: a cascade of climate tipping points is possible



Guardian graphic. Source: Lenton et al, Nature, 2019

Climate tipping points – too risky to bet against

Nature, 2019

Timothy M. Lenton, Johan Rockström, Owen Gaffney, Stefan Rahmstorf, Katherine Richardson, Will Steffen & Hans Joachim Schellnhuber

The growing threat of abrupt
and irreversible
changes
political a
action on e

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IPCC
st be
es an emergency

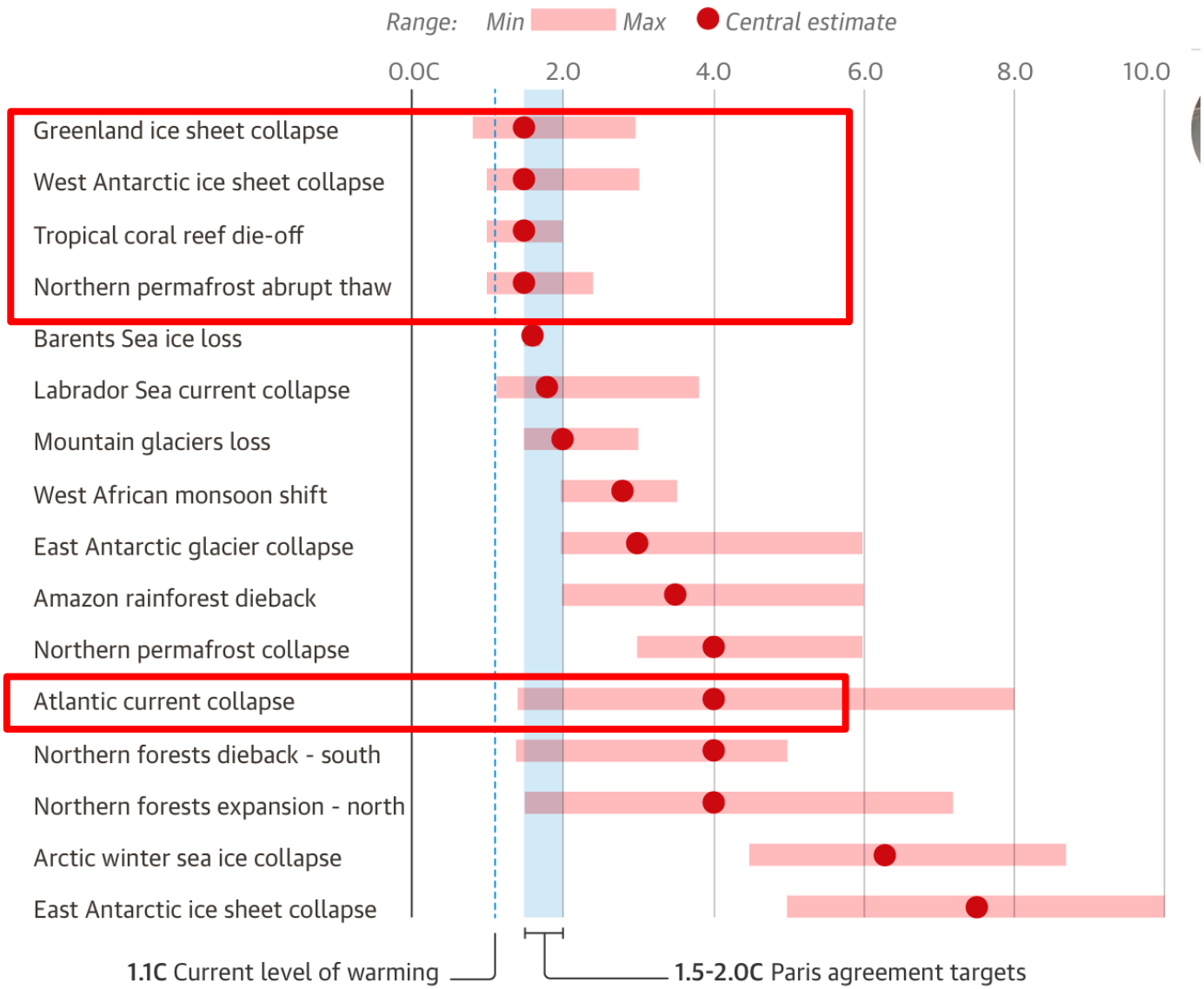
"The clearest emergency would be if we were approaching a global cascade of tipping points."

Exceeding 1.5°C global warming could trigger multiple climate tipping points

DAVID I. ARMSTRONG MCKAY, ARIE STAAL, JESSE F. ABRAMS, RICARDA WINKELMANN, BORIS SAKSCHEWSKI, SINA LORIANI, INGO FETZER, SARAH E. CORNELL, JOHAN ROCKSTRÖM, [...] TIMOTHY M. LENTON +1 authors Authors Info & Affiliations

Science AAAS

SCIENCE · 9 Sep 2022 · Vol 377, Issue 6611 · DOI: 10.1126/science.abn7950



Guardian graphic. Source: Armstrong McKay et al, Science, 2022. Note: Current global heating temperature rise 1.1C

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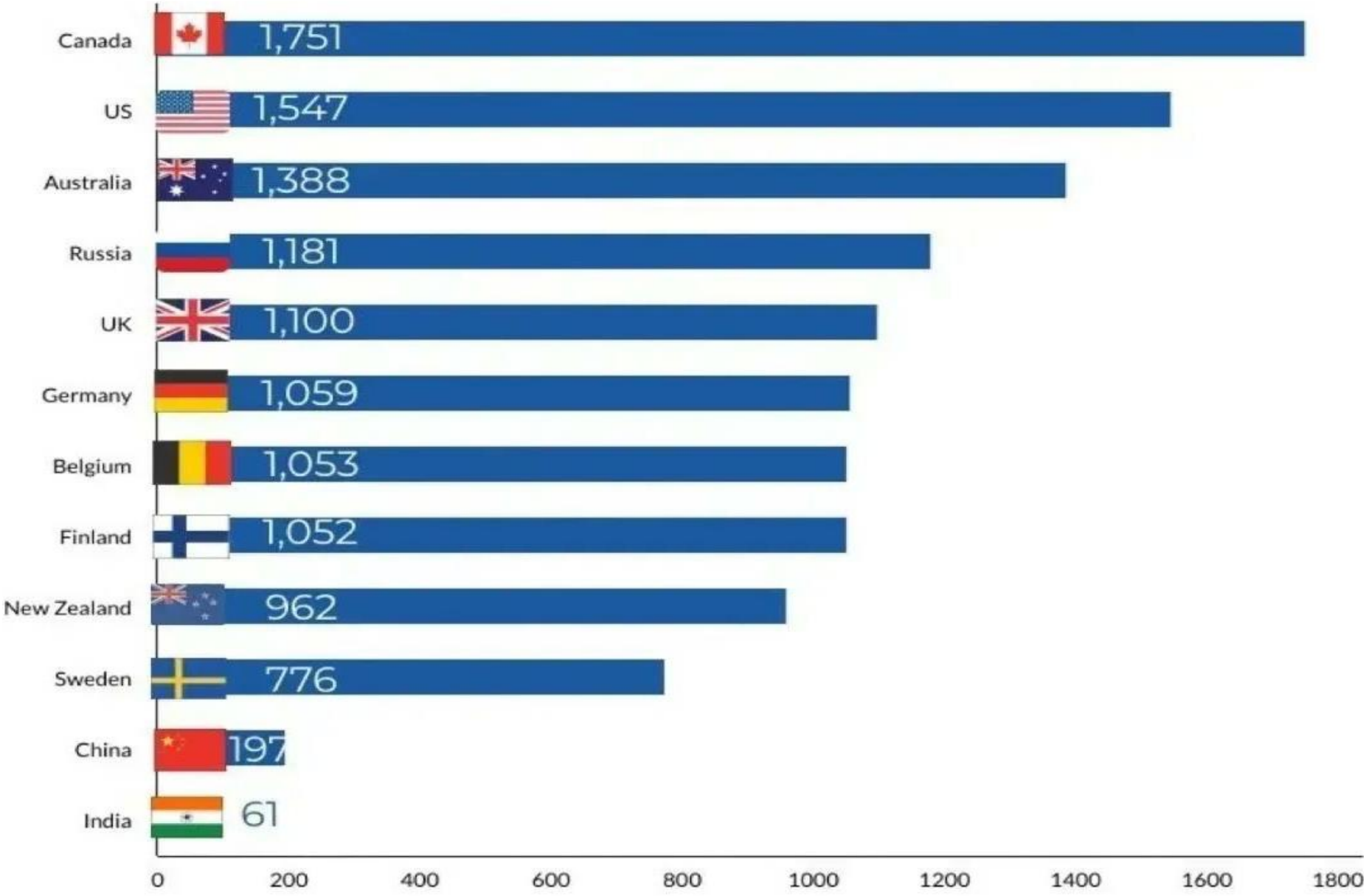
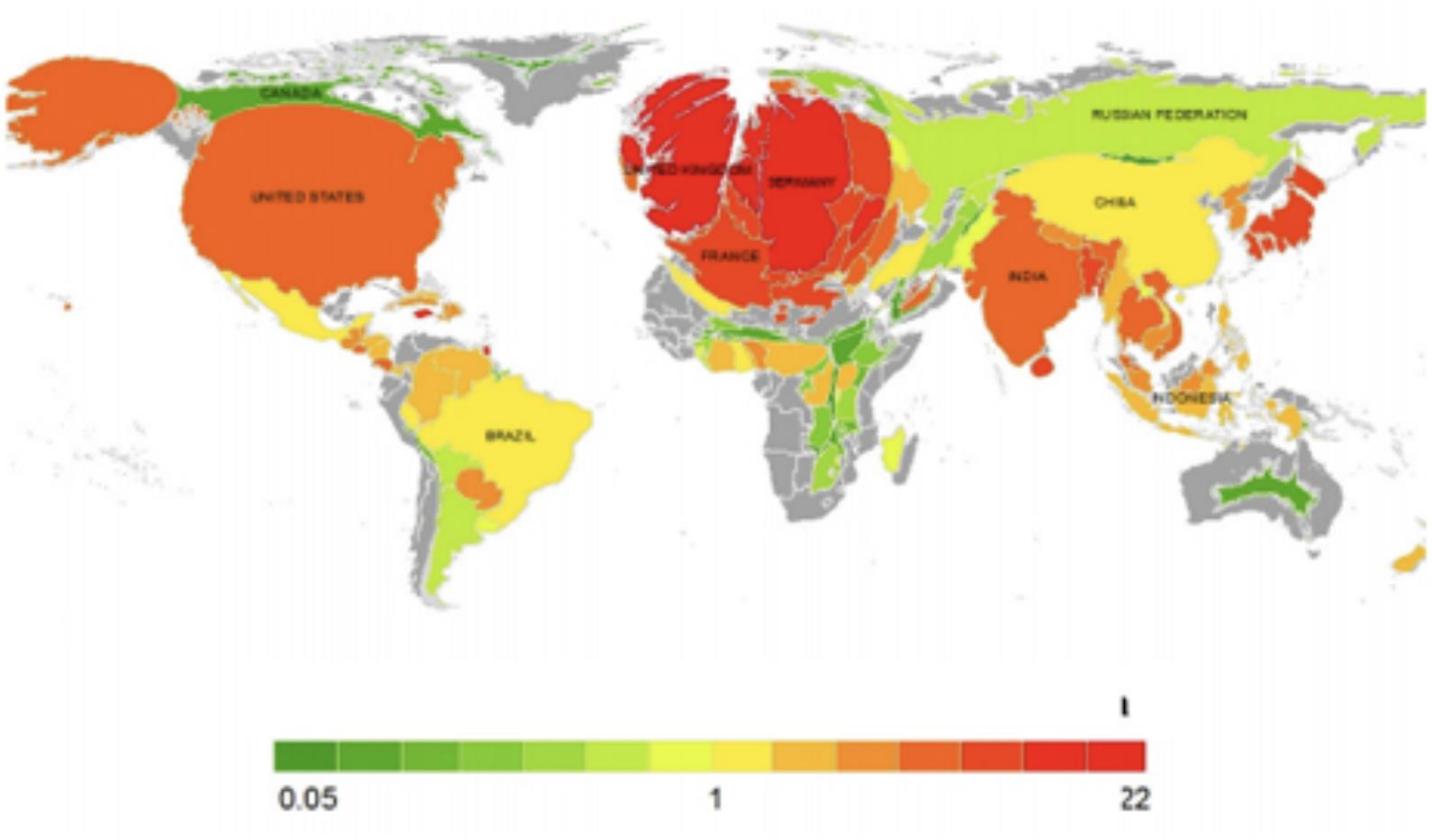
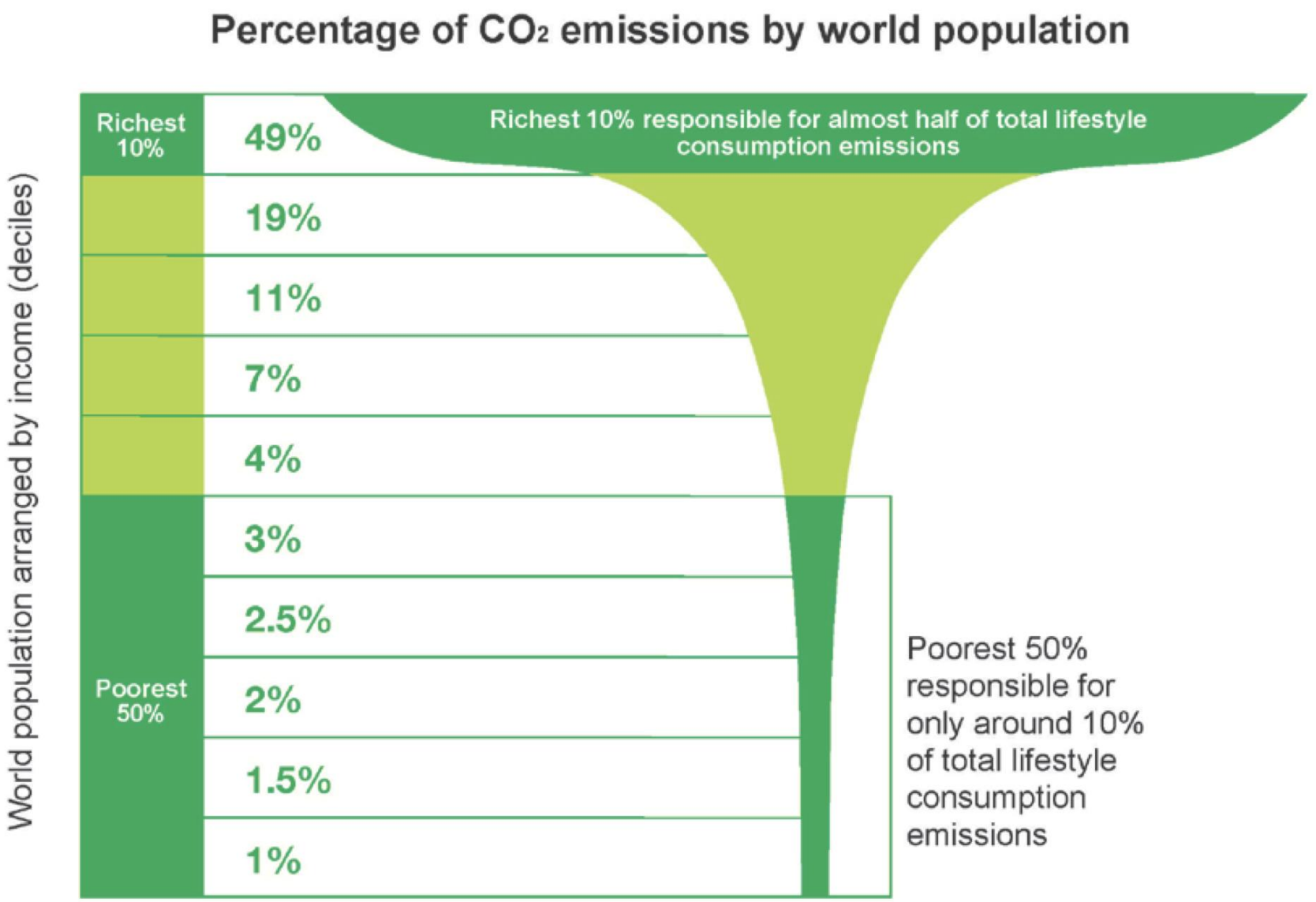
Cumulative carbon emissions per capita from 1850-2021 (tCO_2), selected countries





Country areas proportionate to climate contribution (Pic ERL)



Source: Oxfam

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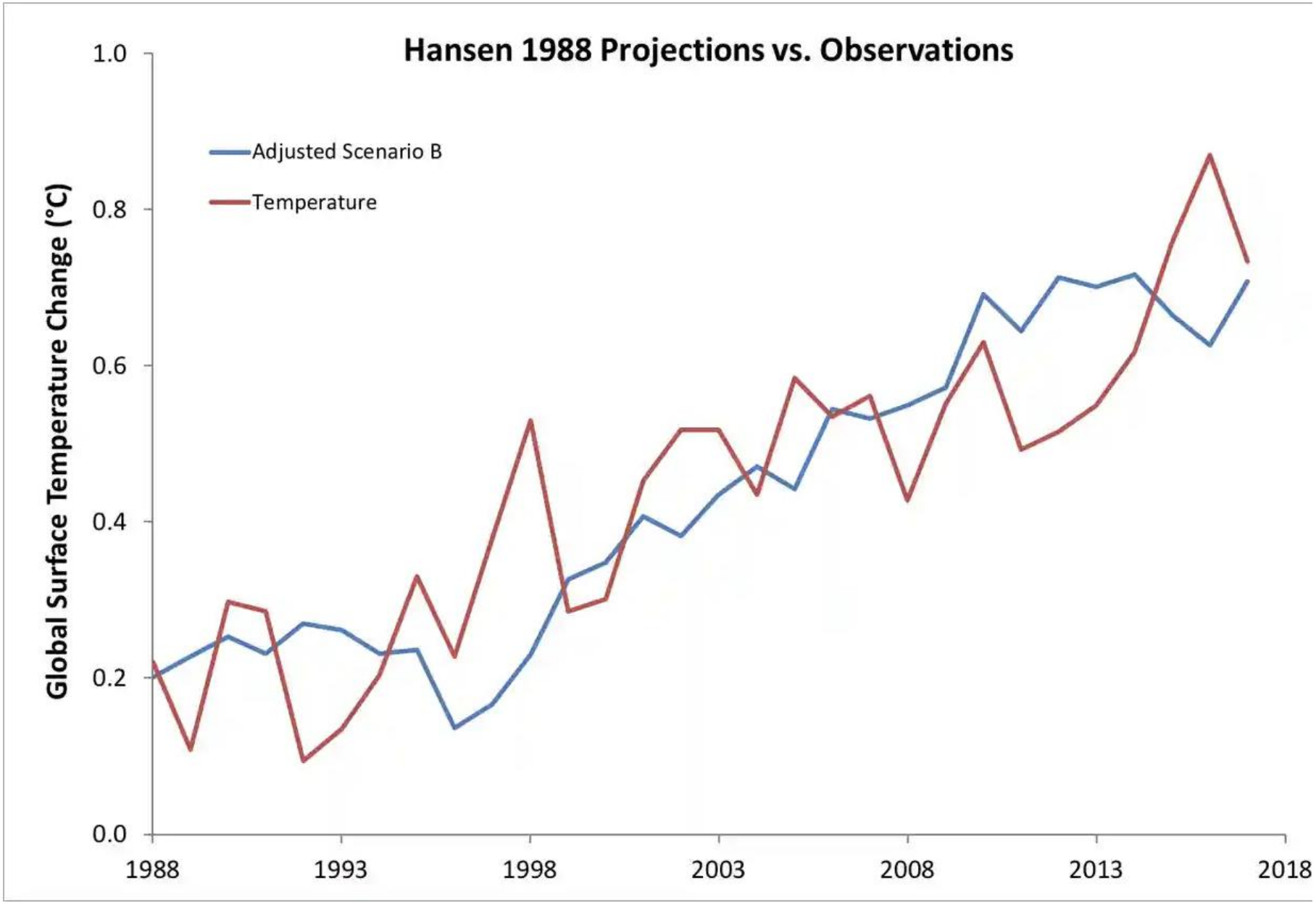


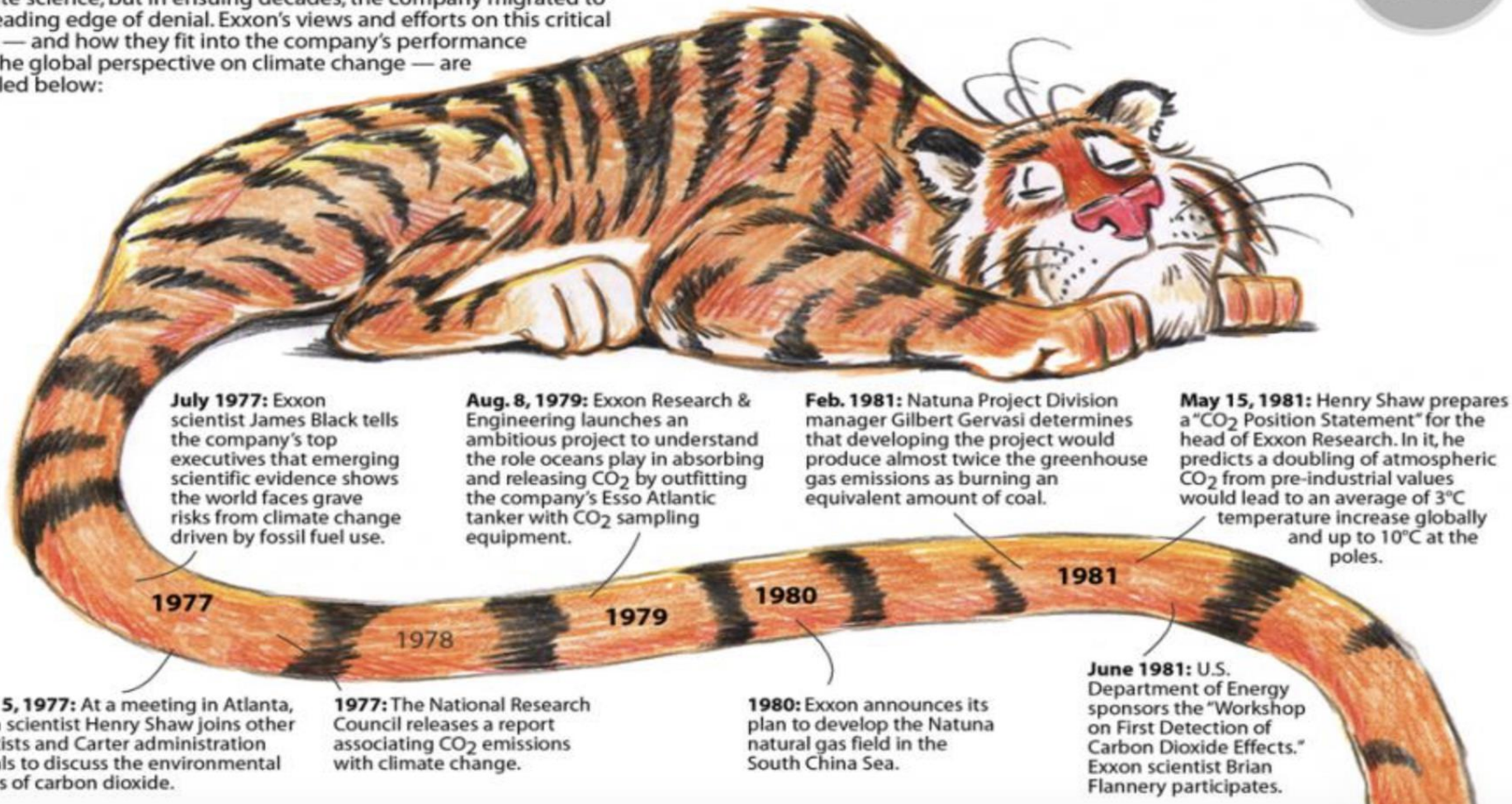
May 9, 1989 James Hansen, director of NASA's Goddard Institute for Space Studies in New York, testifies before US Senate

The 2016 Pulitzer Prize Finalist in Public Service

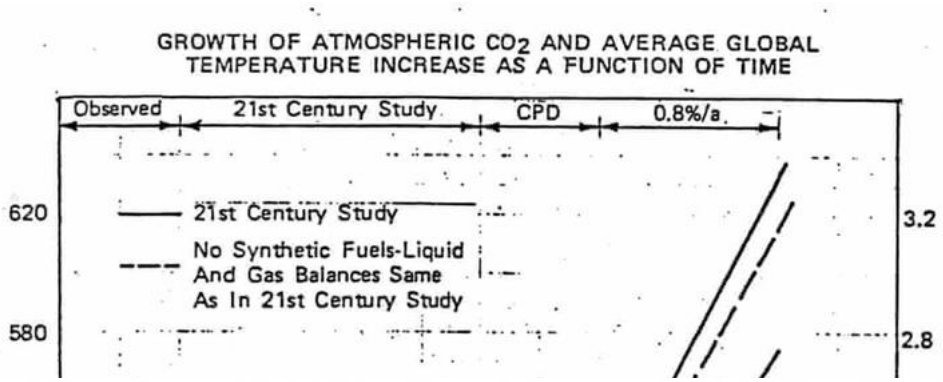
The Long Tale of Exxon and Climate Change

inside climate news

In the late 1970s, Exxon staked out a position at the forefront of climate science, but in ensuing decades, the company migrated to the leading edge of denial. Exxon's views and efforts on this critical issue — and how they fit into the company's performance and the global perspective on climate change — are detailed below:



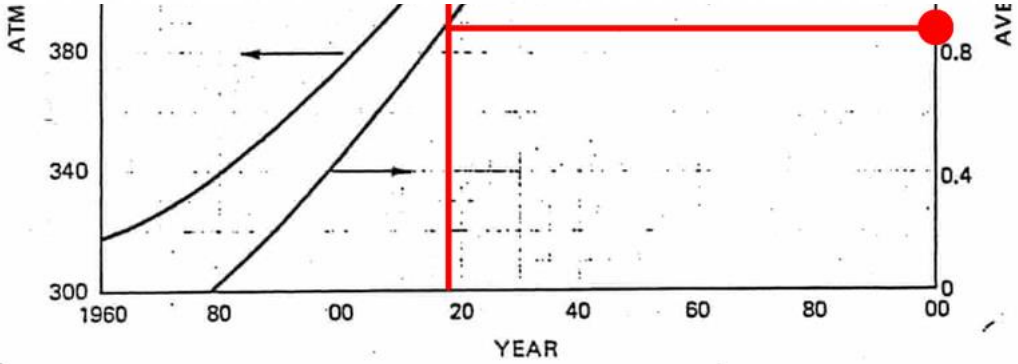
Exxon errechnete 1982 den CO_2-Meilenstein von 2019



The "greenhouse effect" is not likely to cause substantial climatic changes until the average global temperature rises at least 1°C above today's levels. This could occur in the second to third quarter of the next century. However, there is concern among some scientific groups that once the effects are measurable, they might not be reversible and little could be done to correct the situation in the short term. Therefore, a number of environmental groups are calling for action now to prevent an undesirable future situation from developing.

CO2

Temperatur



@exxonmobil

@insideclimate reporters

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Unterentwickelte theoretische Basiskonzepte

- Beziehung Mensch → Natur?
- ärztlichen Ethos *„primum nihil nocere“?*
- Philosophische Prämissen ?
- Generationenethik ?

„On the influence of carbonic acid in the air upon the temperature of the ground“

1908 prognostizierte Arrhenius einen Temperaturanstieg von 5 bis 6°C bis zum Jahr 3000.
So lange brauche es bis sich auf Basis der weltweiten Emissionsraten des Jahres 1896 die CO2-Konzentration verdoppelt habe

Rückkoppelungen nicht berücksichtig!

Nobelpreis für Chemie 1905

THE
LONDON, EDINBURGH, AND DUBLIN
PHILOSOPHICAL MAGAZINE
AND
JOURNAL OF SCIENCE.

[FIFTH SERIES.]

APRIL 1896.

XXXI. *On the Influence of Carbonic Acid in the Air upon the Temperature of the Ground.* By Prof. SVANTE ARRHENIUS *.

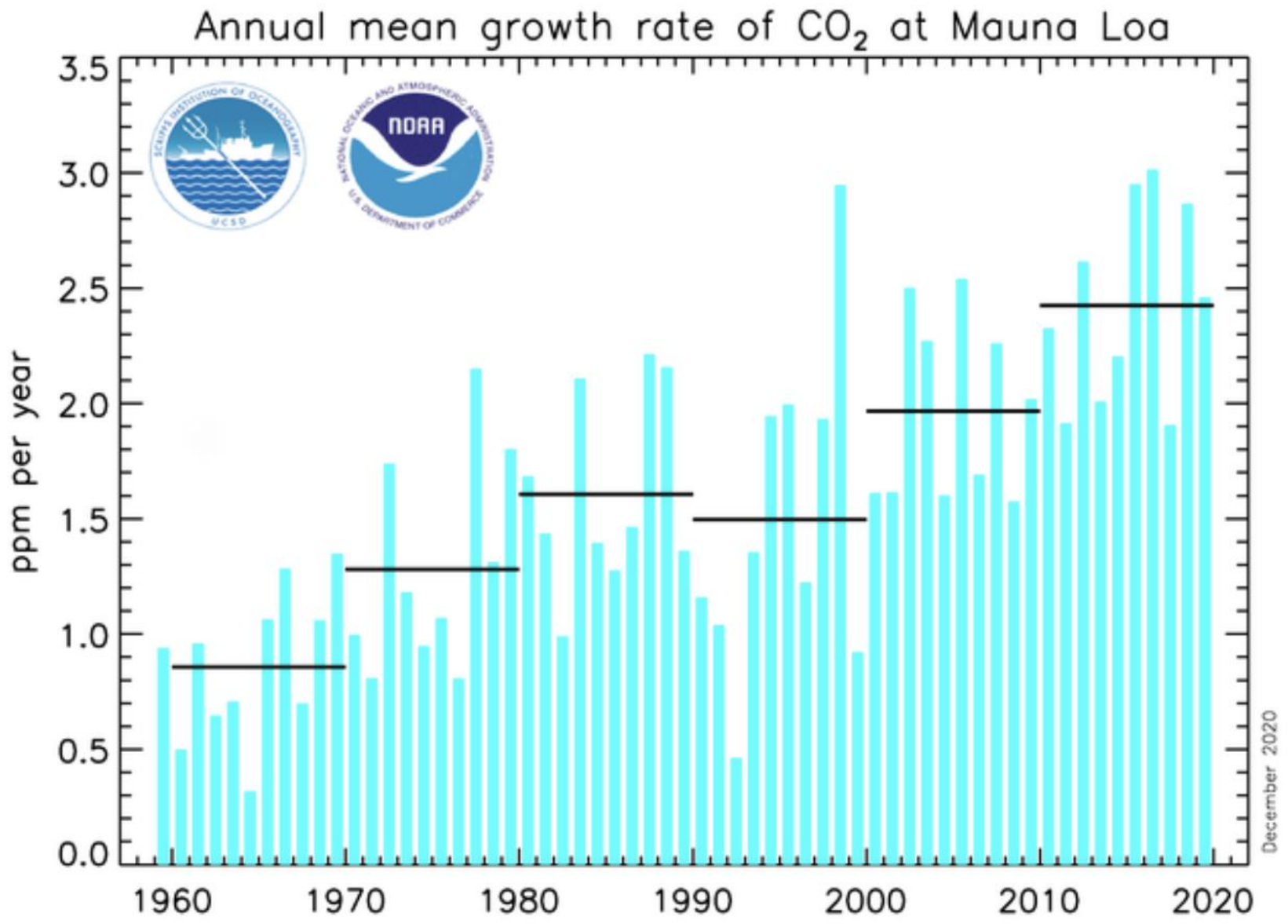
I. *Introduction: Observations of* Langley *on Atmospherical Absorption.*

A GREAT deal has been written on the influence of the absorption of the atmosphere upon the climate. Tyndall † in particular has pointed out the enormous importance of this question. To him it was chiefly the diurnal and annual variations of the temperature that were lessened by this circumstance. Another side of the question, that has long attracted the attention of physicists, is this: Is the mean temperature of the ground in any way influenced by the presence of heat-absorbing gases in the atmosphere? Fourier‡ maintained that the atmosphere acts like the glass of a hot-house, because it lets through the light rays of the sun but retains the dark rays from the ground. This idea was elaborated by Pouillet §; and Langley was by some of his researches led to the view, that "the temperature of the earth under direct sunshine, even though our atmosphere were present as now, would probably fall to −200° C., if that atmosphere did not possess the quality of selective

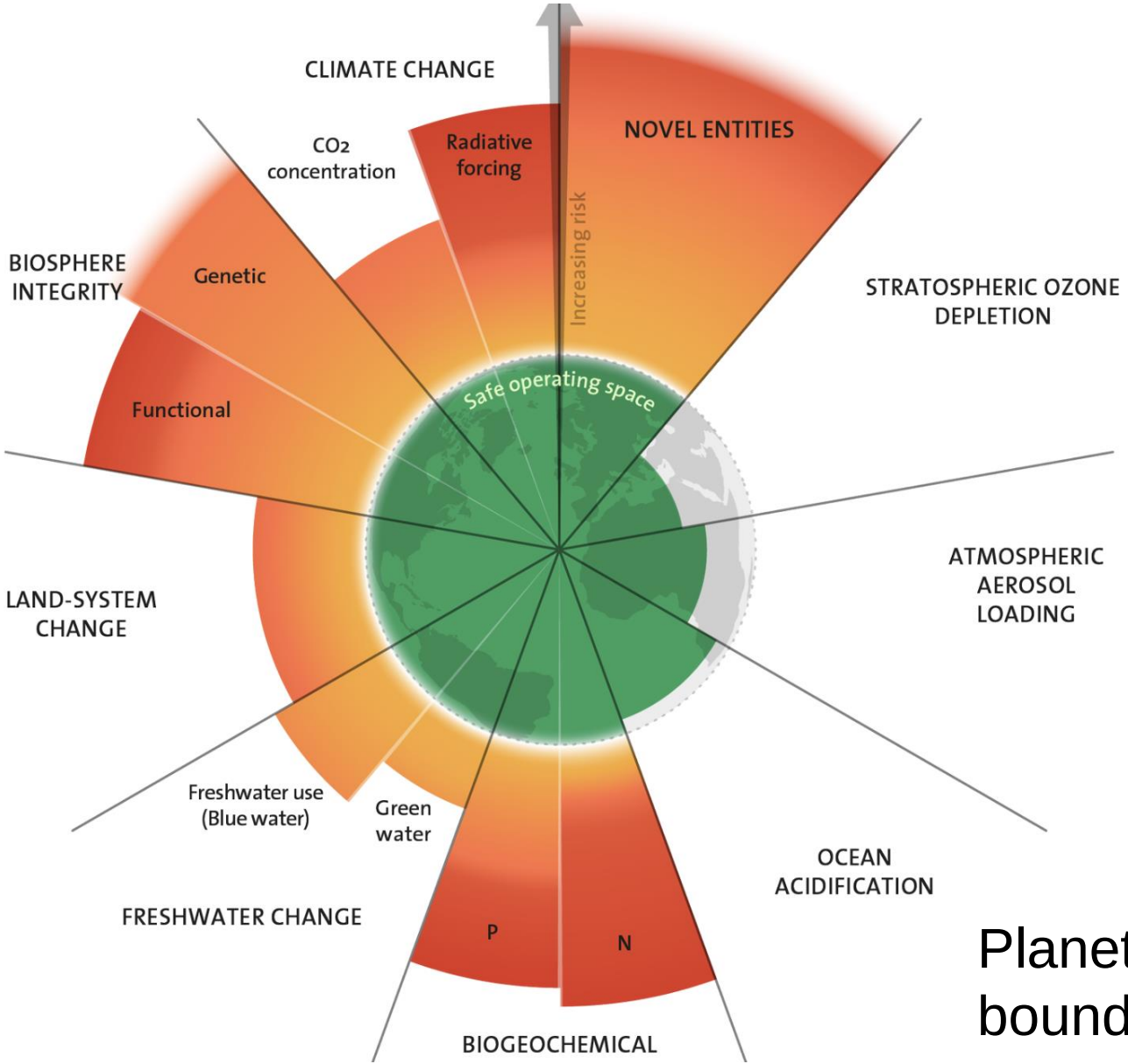
* Extract from a paper presented to the Royal Swedish Academy of Sciences, 11th December, 1895. Communicated by the Author.
† 'Heat a Mode of Motion,' 2nd ed. p. 405 (Lond., 1865).
‡ *Mém. de l'Ac. R. d. Sci. de l'Inst. de France*, t. vii. 1827.
§ *Comptes rendus*, t. vii. p. 41 (1838).

„Der Anstieg des CO_2 wird zukünftigen Menschen erlauben, unter einem wärmeren Himmel zu leben.“

Annual Mean Growth Rate for Mauna Loa, Hawaii



All planetary boundaries mapped out for the first time, six of nine crossed



Planetary boundaries 2023

Empfehlungen der Bioethikkommission

Reduktion der THG Emissionen->Reduktion fossiler MIV

Grundrecht auf Umwelt und Klimaschutz.

Reduktion: Flächenverbrauch

Reduktion: Förderungen klimaschädlicher Aktivitäten (5%BIP)

Neuordnung: Medienförderung nach Qualitätskriterien.

Klimakrisenfolgen:in den Bildungskanon.

Mitigations Strategien

Forschungsförderung: Erforschung -> Klimafolgen

What can we do?

Der Ökologe Franz Essl, „Wissenschafter des Jahres 2022" (Mitte), solidarisierte sich öffentlich mit den Klimaaktivisten.
Foto: apa / Georg Hochmuth

kommentar von
Zebetner, 17. Jänner

aft und
ktivismus

h Zebetner hier äu-
nzwertig. Dass ein

ihrer Expertise als auch aufgrund ihres sozialen Gewissens eine Meinung zu gesellschaftspolitischen Fragen haben und diese auch artikulieren, ist nur wünschenswert. Dass Aktivistinnen und Aktivisten die Wissenschaft

Verpflichtet zur aktiven Einmischung

Der Gastkommentar von Elisabeth Zebetner stößt bei mir auf tiefstes Unverständnis, wenn sie meint, Wissenschafter sollten in ihren

schuldet, dass die Wissenschaft in Österreich als ziemlich nutzlos eingestuft wird.

Ein Appell: Lassen Sie die Wissenschafter nicht in Ruhe und fordern Sie ein, dass sie ihrer Pflicht

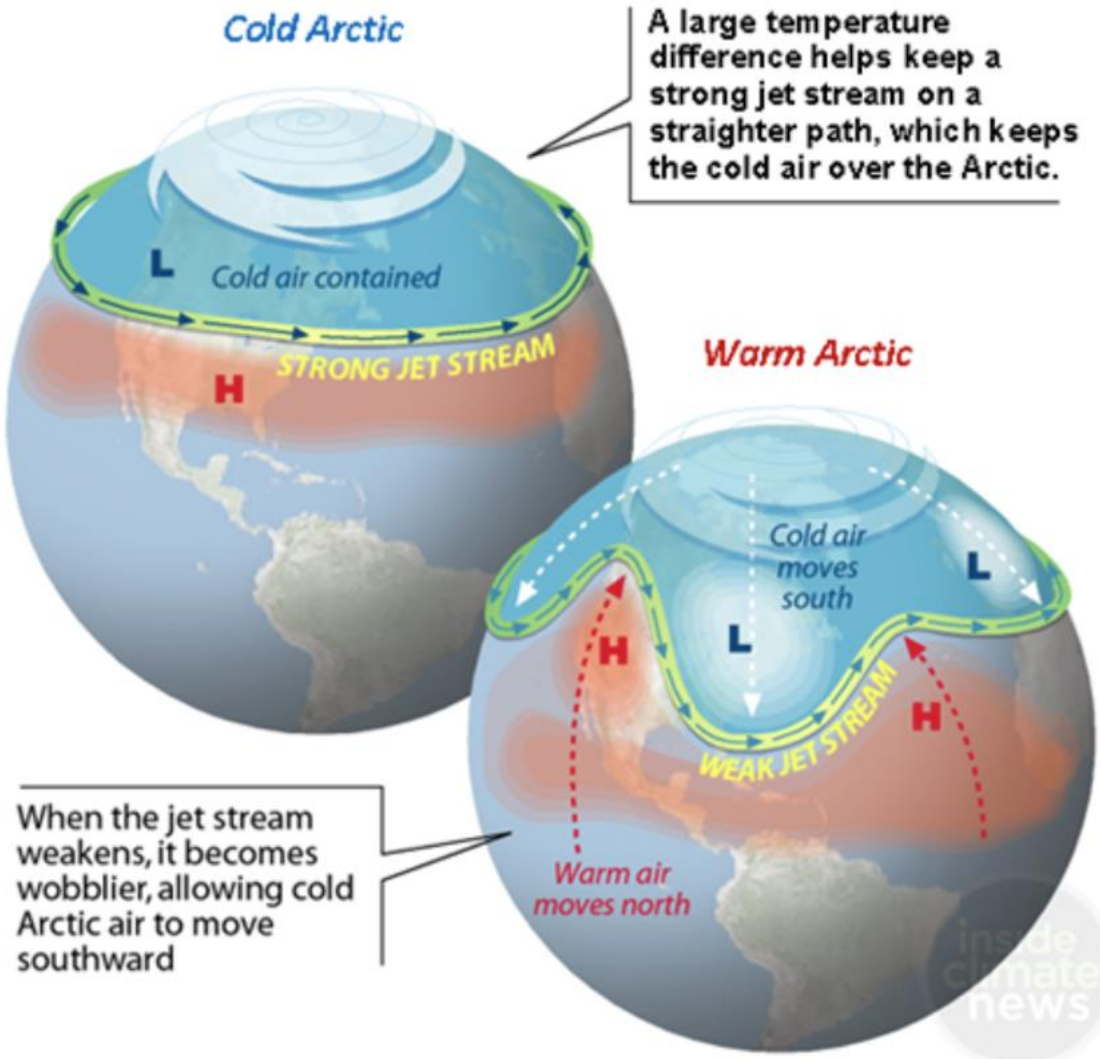
darüber nachgedach
Flächen wieder ent
können.

Auf der andere
bahn befinden s
hende Betriebs


Danke für Ihre Aufmerksamkeit!
I DON'T BELIEVE IN

How Does Arctic Warming Affect the Jet Stream?

The difference in temperature between the Arctic and areas farther south fuels the west winds of the jet stream. A warm Arctic reduces that temperature difference, which weakens the winds and favors a wavier flow. Big waves move slowly and allow warm air to stream northward in ridges while cold air dips southward in troughs.

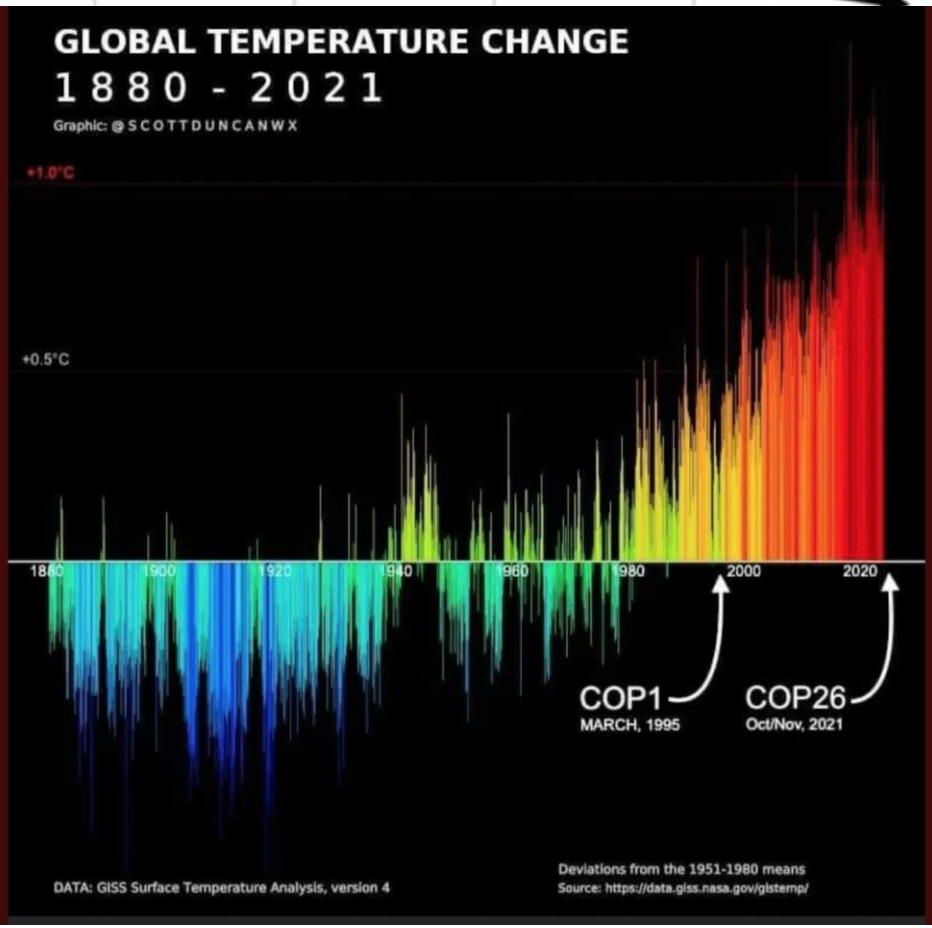


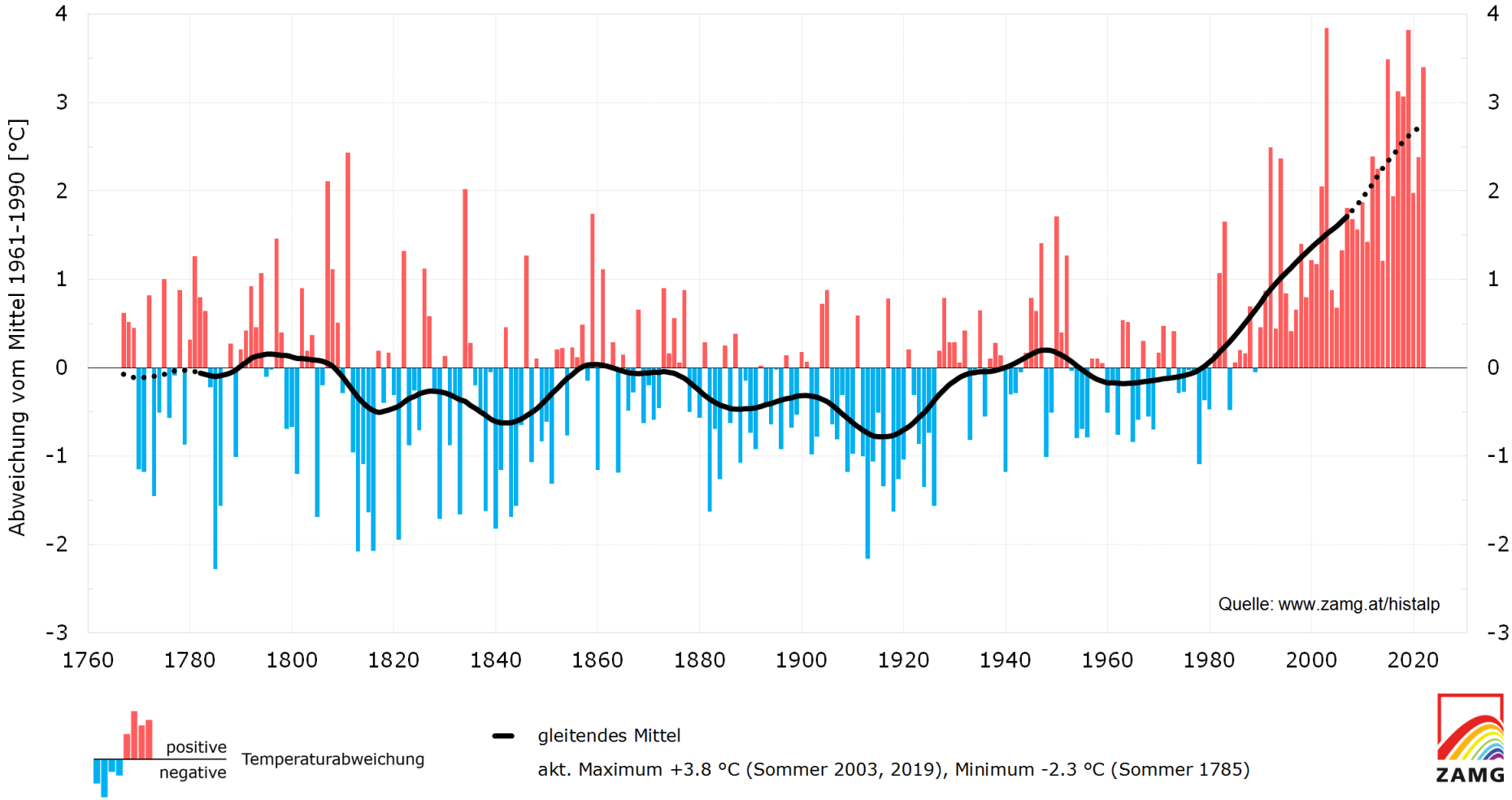
SOURCES: NOAA; *Scientific American*

PAUL HORN / InsideClimate News


MorinToons Syndicate
MORIN
08-9-18
BURN, BABY, BURN!
FOSSIL FUEL, Inc.


Mauna Loa Monthly Averages
410
Paris Agreement


GLOBAL TEMPERATURE CHANGE
1880 - 2021
Graphic: @SCOTTDUNCANWX
+1.0°C
+0.5°C
1880
1900
1920
1940
1960
1980
2000
2020
COP1
MARCH, 1995
COP26
Oct/Nov, 2021
DATA: GISS Surface Temperature Analysis, version 4
Deviations from the 1951-1980 means
Source: https://data.giss.nasa.gov/gistemp/



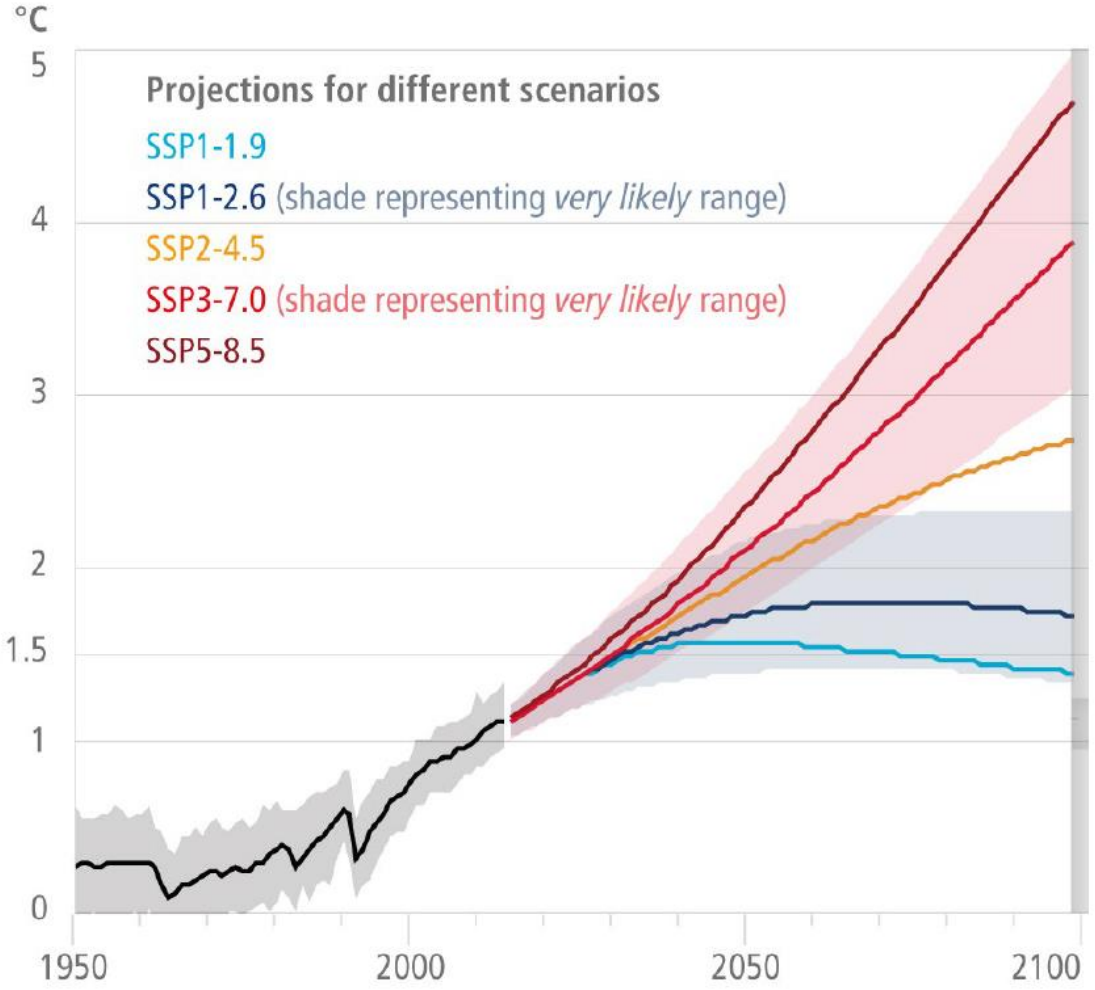
positive
negative
Temperaturabweichung

gleitendes Mittel

akt. Maximum +3.8 °C (Sommer 2003, 2019), Minimum -2.3 °C (Sommer 1785)

ZAMG

IPCC 2022



Global surface temperature changes °C rel. to 1850–1900

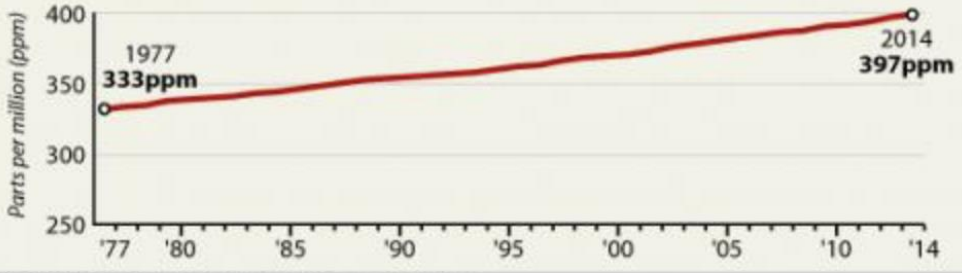
effects of carbon dioxide.

Exxon scientist Brian Flannery participates.

Over this time period, CO_2 concentration in the atmosphere has been steadily increasing.

CARBON DIOXIDE IN THE ATMOSPHERE, IN PARTS PER MILLION

Annual global mean, 1977-2014



SOURCE: National Oceanic and Atmospheric Administration

1982: After not receiving anticipated federal grant money, Exxon cancels the climate-related tanker project. Company focuses instead on climate modeling.

Sept. 2, 1982: Exxon's Roger Cohen prepares a memo concerning the company's climate modeling efforts. "In summary, the results of our research are in accord with the scientific consensus on the effect of increased atmospheric CO_2 on climate," he wrote.

Nov. 12, 1982: A 43-page primer on climate change is distributed internally within Exxon. It says reducing the greenhouse effect "would require major reductions in fossil fuel combustion."

1991: Exxon first mentions climate change to shareholders in its SEC filings. "To broaden understanding of potential global warming, Exxon supported interdisciplinary research on global climate change and energy policy…," the company wrote.

1989: Exxon, along with Shell, British Petroleum and other businesses, form the Global Climate Coalition, a group that opposes action on climate change. The GCC helps persuade the U.S. against signing the Kyoto Protocol before disbanding in 2002.

1996: Exxon CEO Lee Raymond tells a group of Detroit businessmen that the scientific evidence showing whether human activities are contributing to climate change "is inconclusive."

1997: Adoption of the Kyoto Protocol, an international agreement committing developed nations to reduce greenhouse gas emissions.

1998: Exxon publishes a glossy 12-page booklet titled, "Global climate change everyone's debate." The brochure's text contends that global warming is not a proven threat and disagrees with

1990: Columbia scientist Taro Takahashi co-authors a study on carbon dioxide in the oceans using data collected from Exxon's tanker project. He later writes a follow-up study using the same data in 2009.

March 24, 1989: One of the largest oil spills in U.S. history occurs when the Exxon Valdez tanker hits the Alaskan Bligh Reef, releasing more than 11 million gallons of crude oil into Prince William Sound.

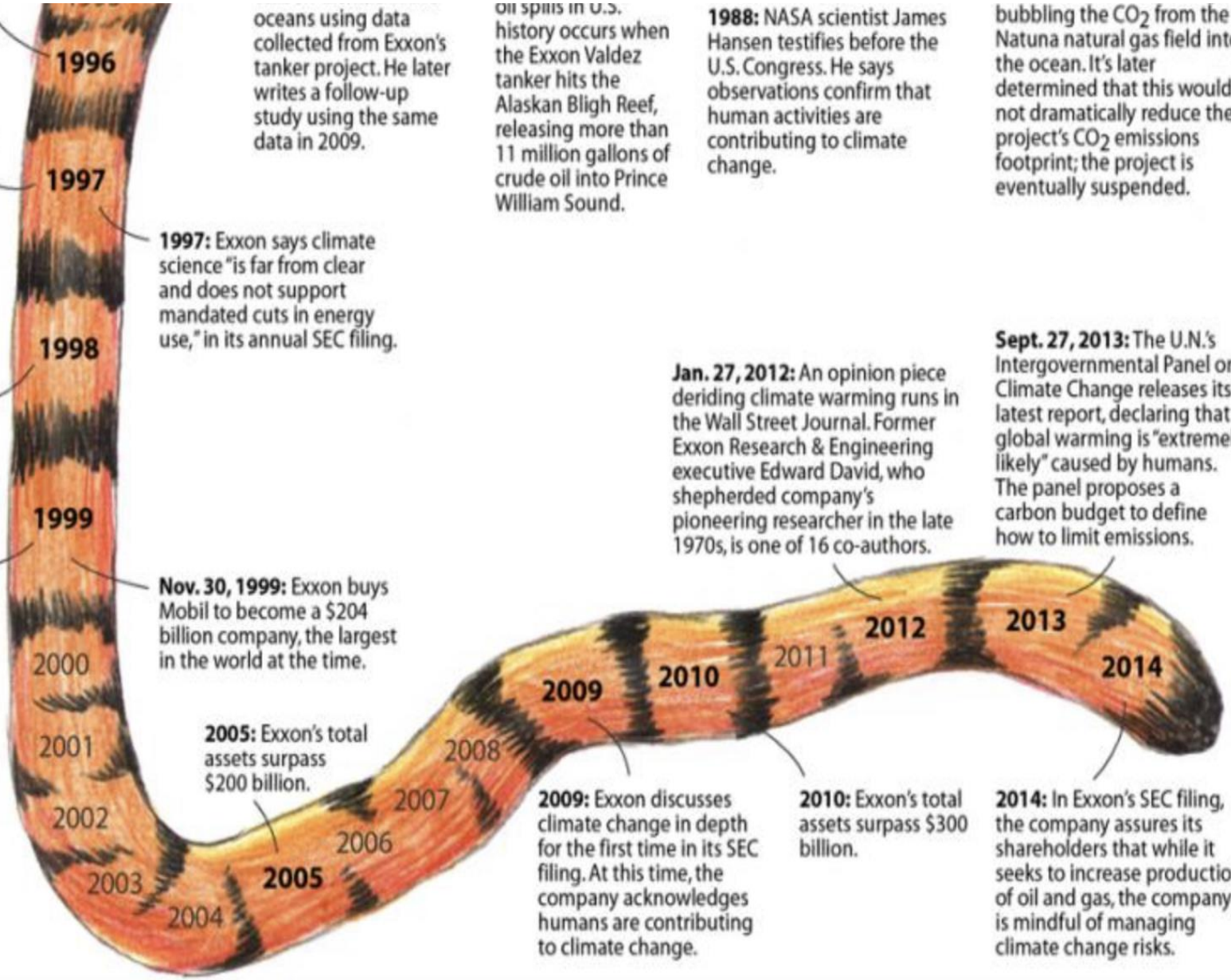
1988: NASA scientist James Hansen testifies before the U.S. Congress. He says observations confirm that human activities are contributing to climate change.

Feb. 1984: Exxon investigates bubbling the CO_2 from the Natuna natural gas field into the ocean. It's later determined that this would not dramatically reduce the project's CO_2 emissions footprint; the project is eventually suspended.

1997: Exxon says climate science "is far from clear and does not support mandated cuts in energy use," in its annual SEC filing.

Jan. 27, 2012: An opinion piece deriding climate warming runs in the Wall Street Journal. Former

Sept. 27, 2013: The U.N.'s Intergovernmental Panel on Climate Change releases its latest report, declaring that



1997: Adoption of the Kyoto Protocol, an international agreement committing developed nations to reduce greenhouse gas emissions.

1998: Exxon publishes a glossy 12-page booklet titled, "Global climate change everyone's debate." The brochure's text contends that global warming is not a proven threat and disagrees with the climate targets set in Kyoto, Japan.

1999: In Exxon's SEC filing, the company says it recognizes the risk of climate change and says, "its potential impacts on society and ecosystems may prove to be significant."

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1997: Exxon says climate science "is far from clear and does not support mandated cuts in energy use," in its annual SEC filing.

Nov. 30, 1999: Exxon buys Mobil to become a $204 billion company, the largest in the world at the time.

2005: Exxon's total assets surpass $200 billion.

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Jan. 27, 2012: An opinion piece deriding climate warming runs in the Wall Street Journal. Former Exxon Research & Engineering executive Edward David, who shepherded company's pioneering researcher in the late 1970s, is one of 16 co-authors.

Sept. 27, 2013: The U.N.'s Intergovernmental Panel on Climate Change releases its latest report, declaring that global warming is "extremely likely" caused by humans. The panel proposes a carbon budget to define how to limit emissions.

2009: Exxon discusses climate change in depth for the first time in its SEC filing. At this time, the company acknowledges humans are contributing to climate change.

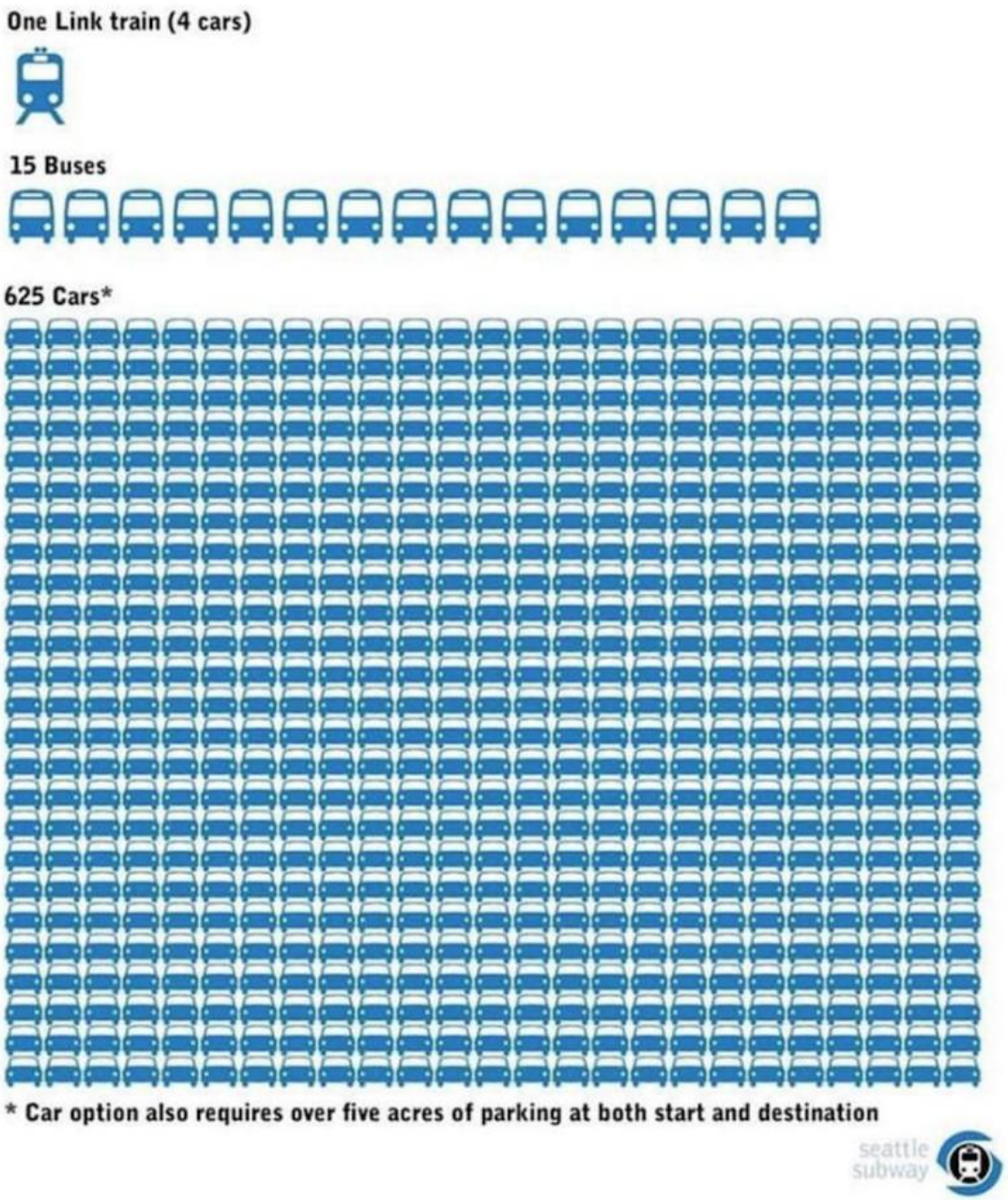
2010: Exxon's total assets surpass $300 billion.

2014: In Exxon's SEC filing, the company assures its shareholders that while it seeks to increase production of oil and gas, the company is mindful of managing climate change risks.

Research by ICN Staff

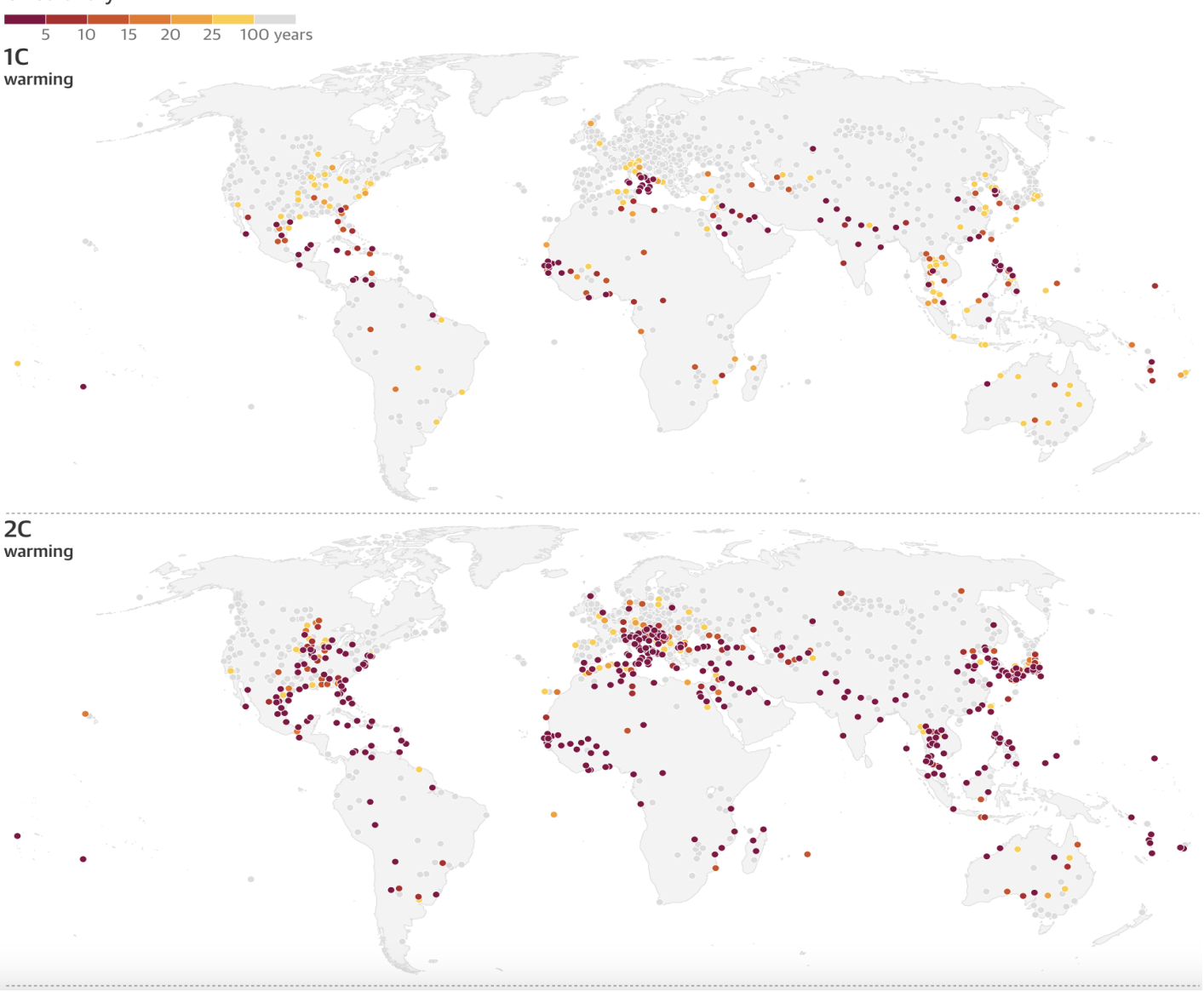
PAUL HORN / InsideClimate News

What does it take to move a thousand people?
ST3 edition

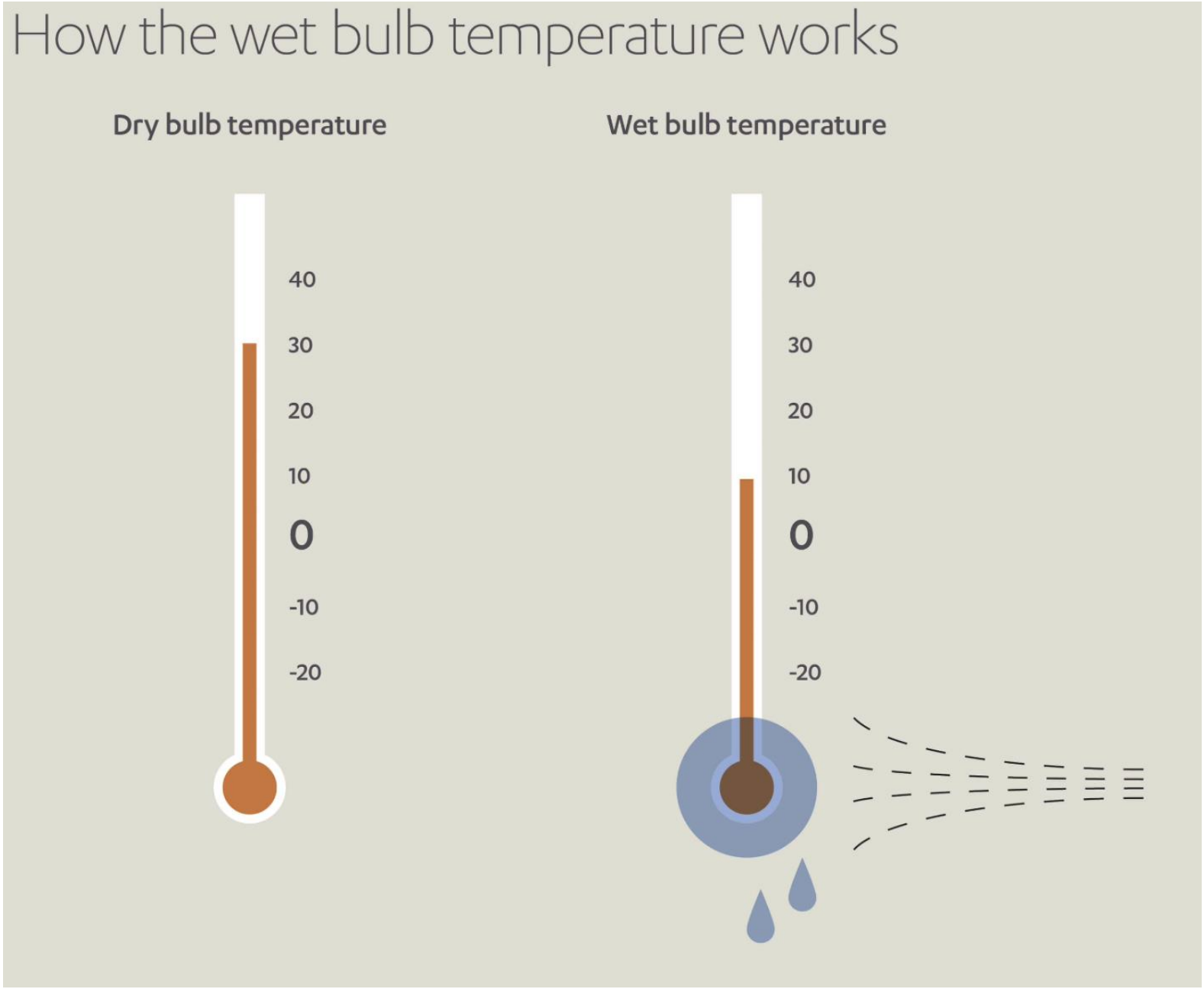


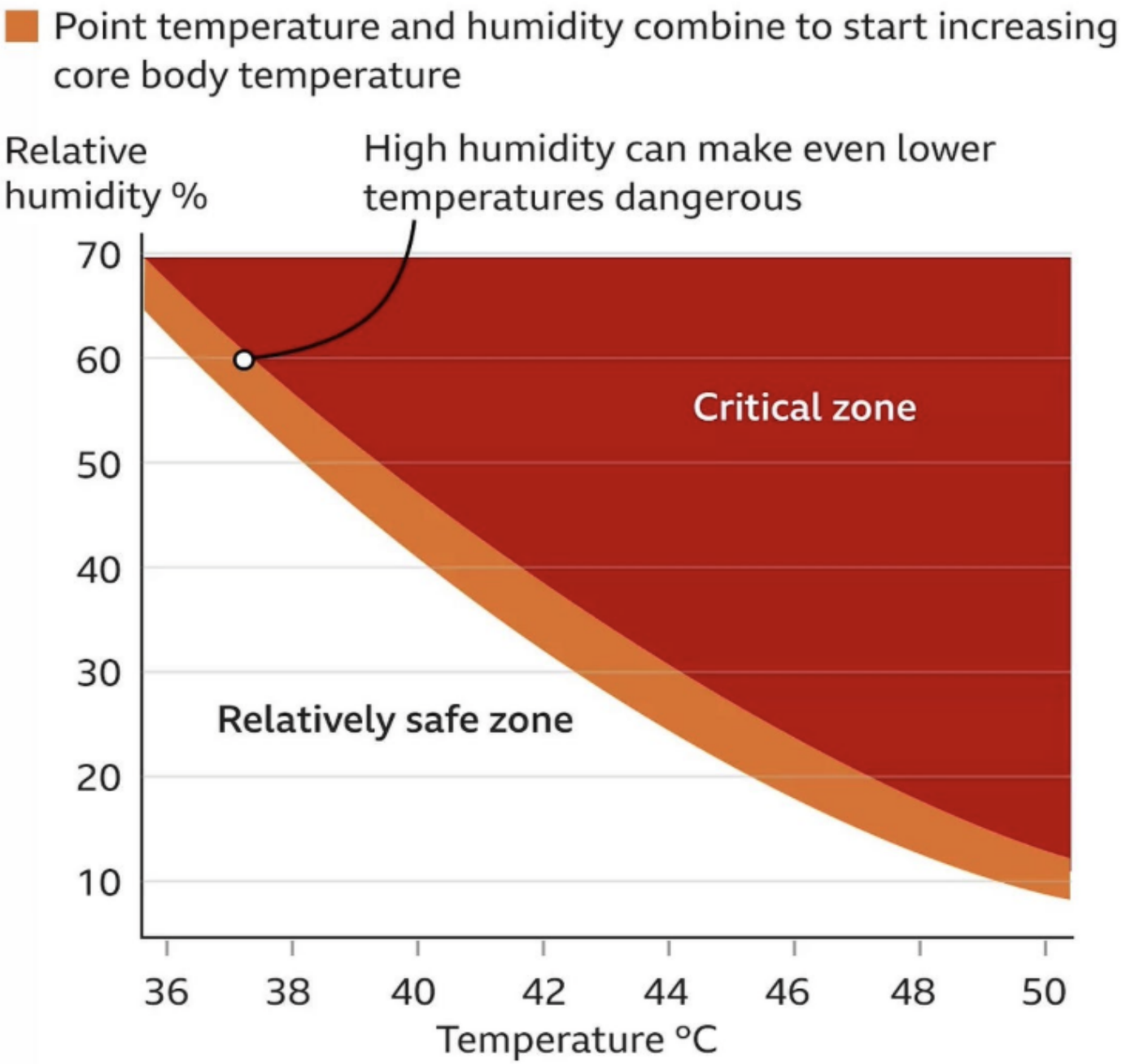
Dangerous heat stress events will spread rapidly across the world as global heating continues

Estimated frequency of one heatwave with at least six hours of non-compensable heat

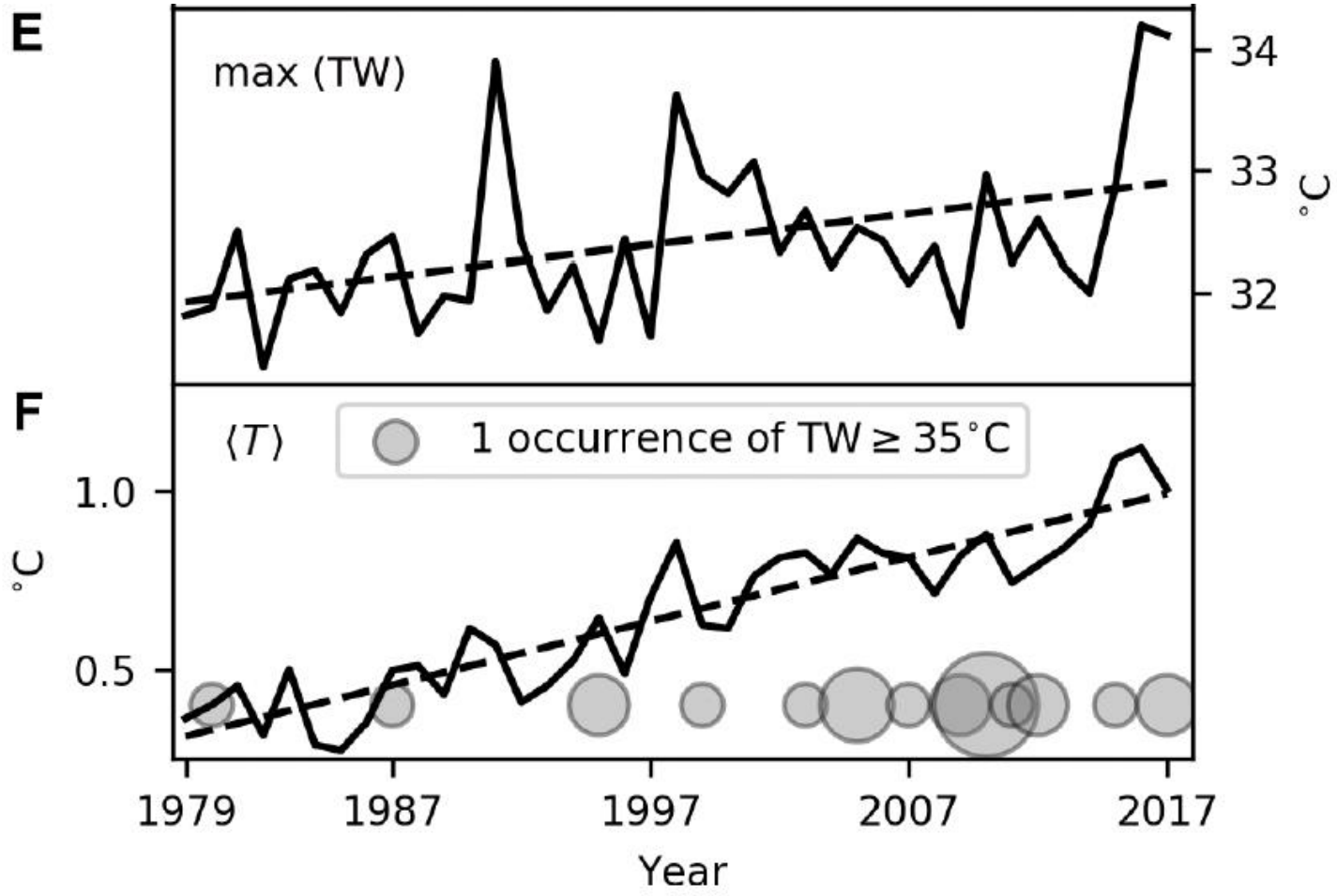


How the wet bulb temperature works



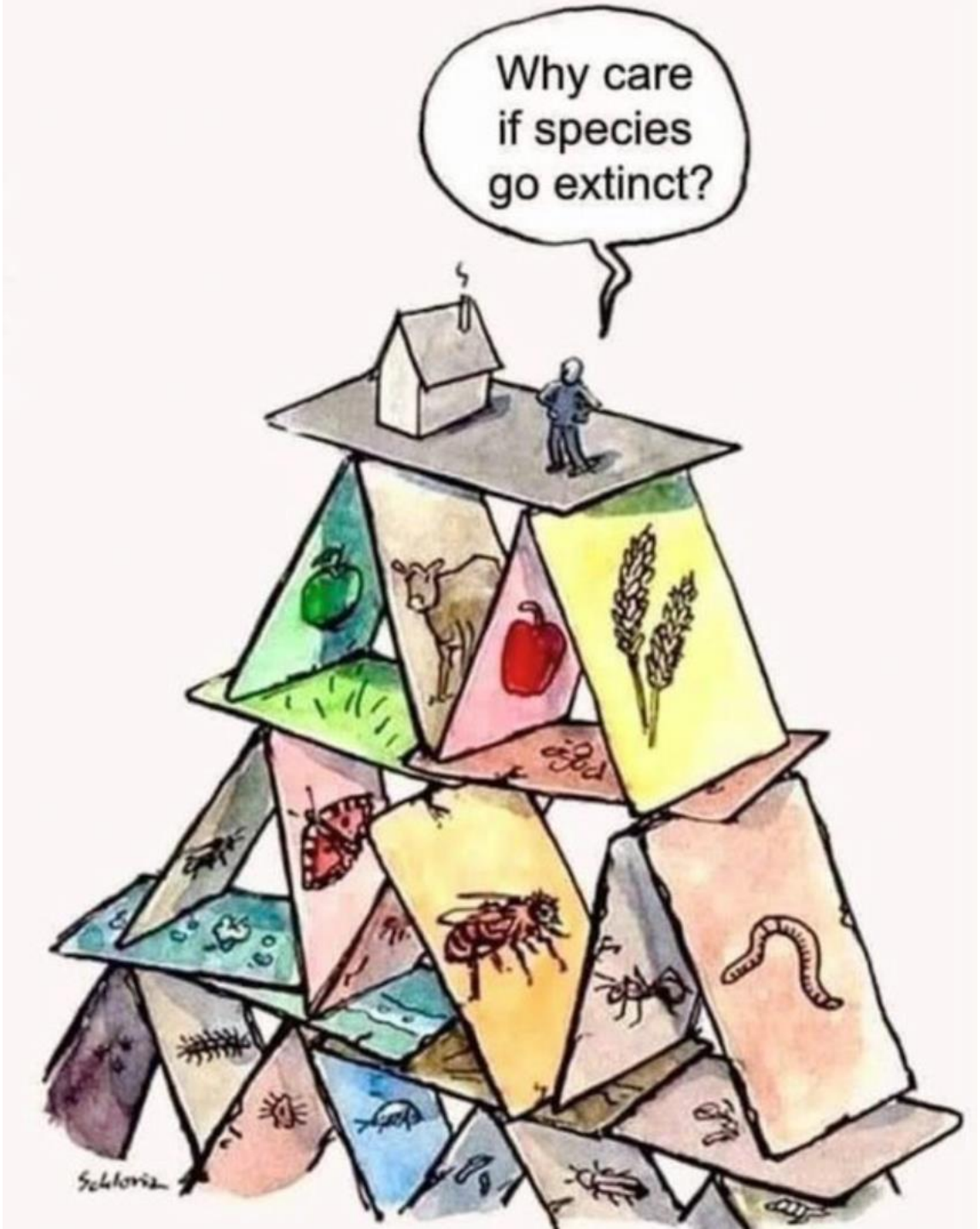


Global trends in extreme humid heat



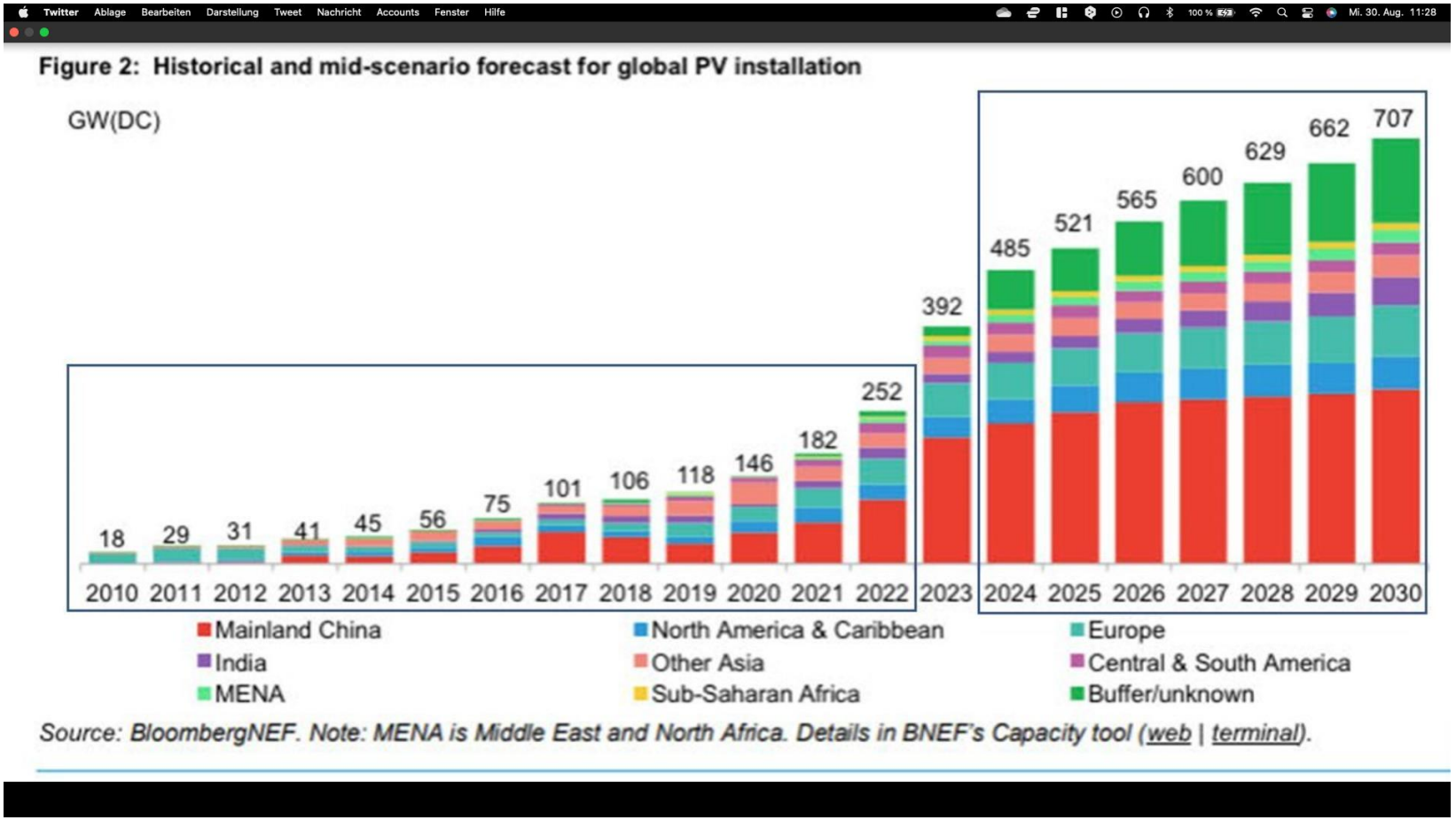
(E) Annual global maximum TW in ERA-Interim. (F) The line plot shows global mean annual temperature anomalies (relative to 1850–1879)

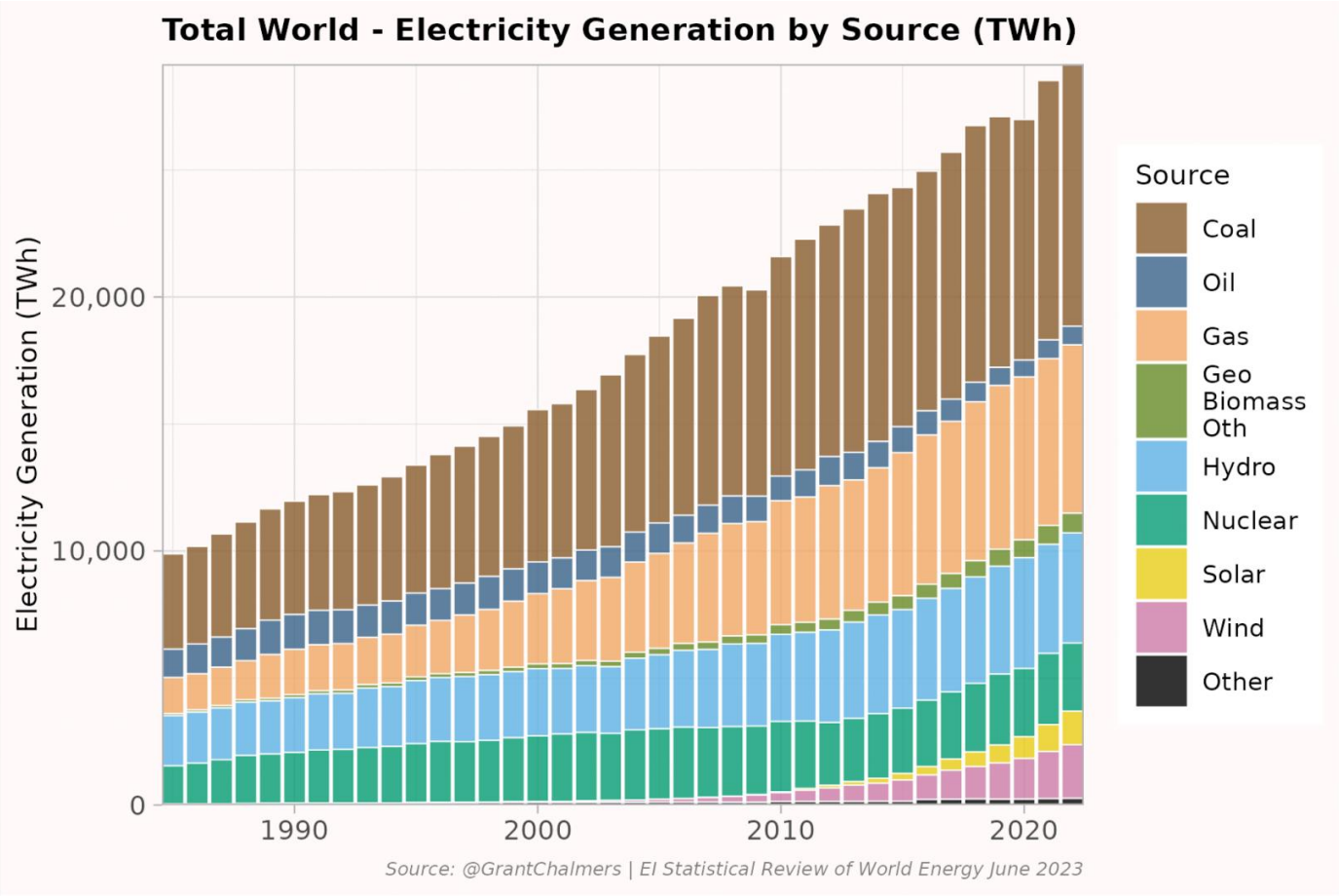
ERA-Interim ist ein globaler atmosphärischer Reanalyse-Datensatz, der vom Europäischen Zentrum für mittelfristige Wettervorhersage erstellt wurde und historische Wetter- und Klimadaten von 1979 bis 2019 bereitstellt


Why care if species go extinct?


This is the HOTTEST summer of my life
This is the COLDEST summer of the rest of your life

Time taken to add 1GW of solar PV globally 2000: more than a year 2010/11: two weeks 2015: one week Now: less than




Total World - Electricity Generation by Source (TWh)
Electricity Generation (TWh)
20,000
10,000
0
1990
2000
2010
2020
Source
Coal
Oil
Gas
Geo Biomass Oth
Hydro
Nuclear
Solar
Wind
Other
Source: @GrantChalmers | EI Statistical Review of World Energy June 2023

PRE PRINT

Österreichischer Special Report Gesundheit, Demographie und Klimawandel

Synthese

Austrian Panel on Climate Change (APCC)

Austrian Special Report 2018 (ASR18)

Universität für Bodenkultur Wien
Wegener Center
UNI GRAZ
Climate Change Centre AUSTRIA
powered by klima+ energie fonds
Vienna Institute of Demography
ÖAW
MEDIZINISCHE UNIVERSITÄT WIEN
ZAMG
Gesundheit Österreich Forschungs- und Planungs GmbH

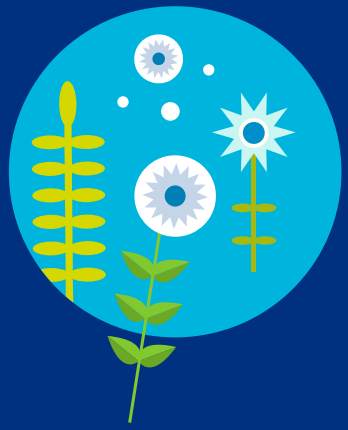

@QueerSatan
THIS IS THE HOTTEST SUMMER OF MY LIFE
THIS IS THE COLDEST SUMMER
OF THE REST OF YOUR LIFE

Klimafolgen

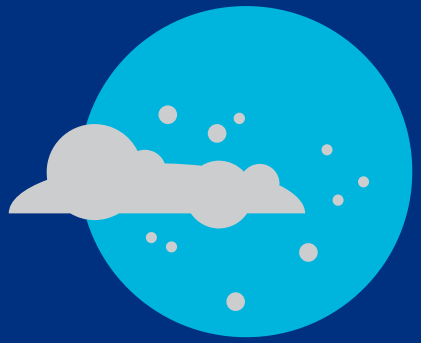
Die 6 größten Problembereiche

1. HITZE

2. POLLEN



3. LUFTSCHADSTOFFE



4. STARKNIEDERSCHLÄGE/ HOCHWASSER

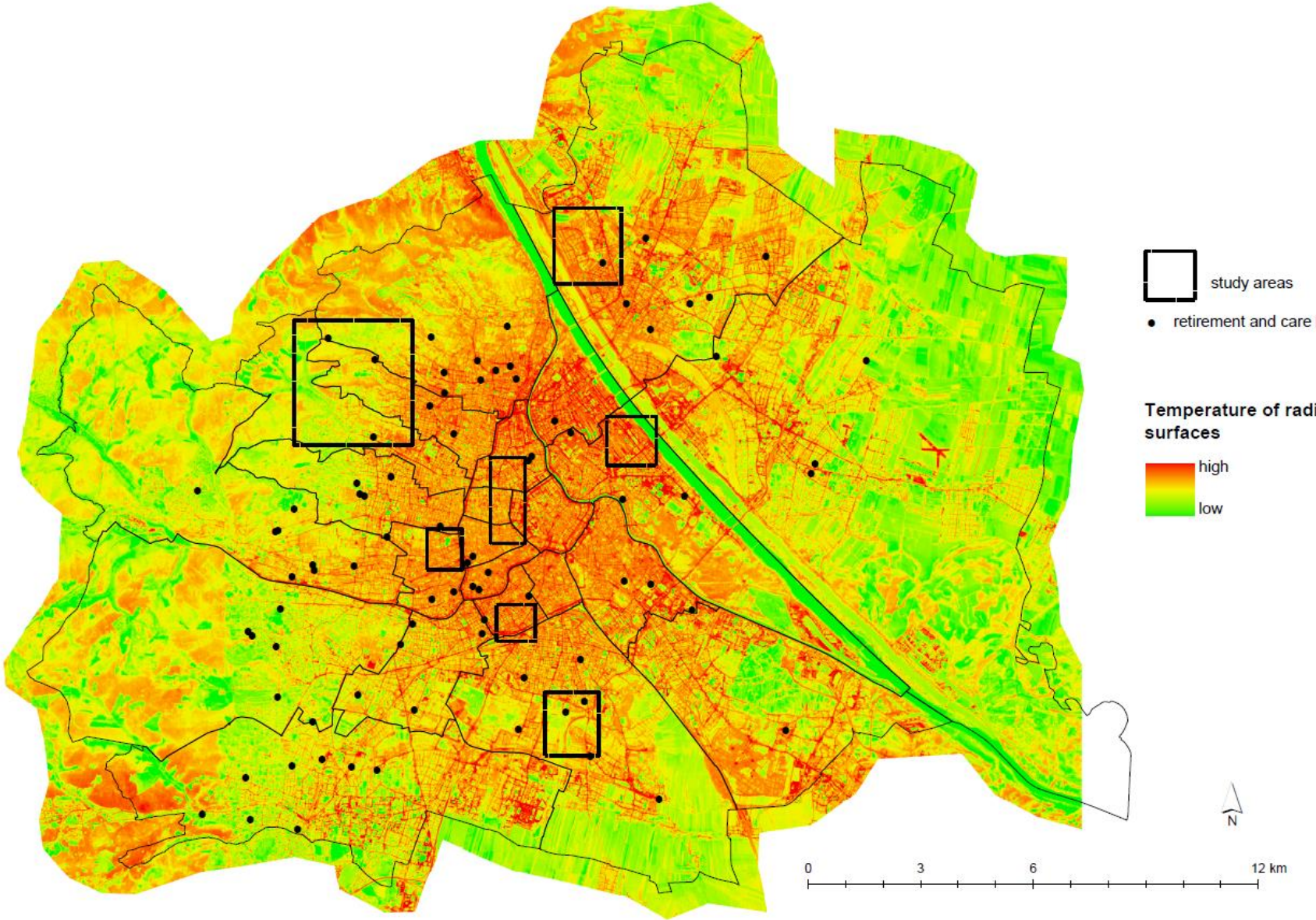
5. DÜRRE

6. MUREN & ERDRUTSCH

Hitzewellen

Gesundheitliche Hitzefolgen

Thermische Belastung


study areas
retirement and care homes
Temperature of radiation from surfaces
high
low
N
0
3
6
12 km

Original Article

Wien Klin Wochenschr (2007) 119/7–8: 223–227
DOI 10.1007/s00508-006-0742-7

WIENER KLINISCHE WOCHENSCHRIFT
The Middle European Journal of Medicine
Printed in Austria

Heatwaves in Vienna: effects on mortality

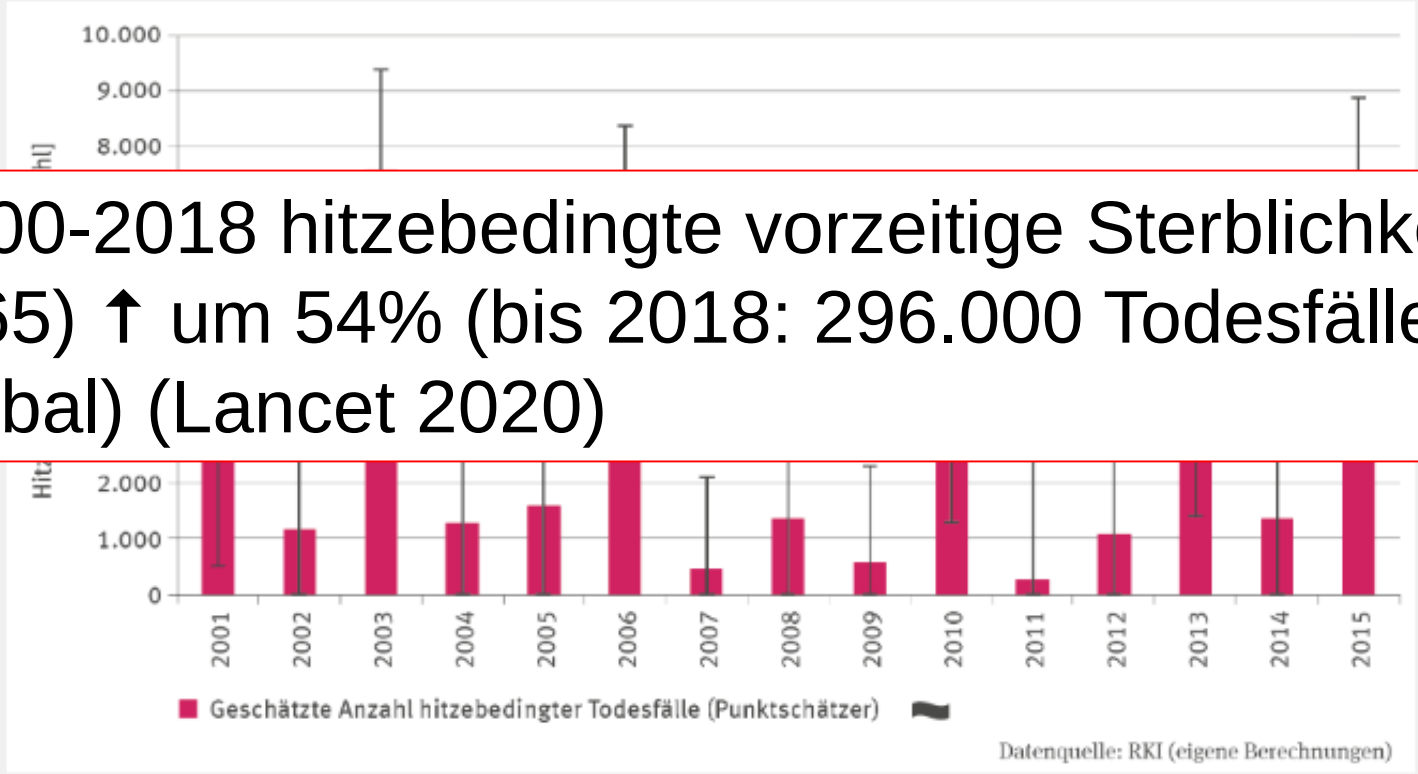
Hans-Peter Hutter[1], **Hanns Moshammer**[1], **Peter Wallner**[2], **Barbara Leitner**[3], and **Michael Kundi**[1]

[1] Institute of Environmental Health, Center for Public Health, Medical University of Vienna, Austria
[2] Medicine and Environmental Protection [mus], Austria
[3] Statistik Austria

Received August 23, 2006, accepted after revision November 9, 2006

GE-I-2: Hitzebedingte Todesfälle

In Jahren mit einer überdurchschnittlich hohen Anzahl von Hitzetagen treten mehr Todesfälle auf als ohne Hitzewelle zu erwarten gewesen wäre. 2003 sind in Deutschland etwa 7.500 Menschen mehr gestorben, für 2006 und 2015 ergeben die Untersuchungen etwa 6.000 zusätzliche Todesfälle.



2000-2018 hitzebedingte vorzeitige Sterblichkeit (>65) ↑ um 54% (bis 2018: 296.000 Todesfälle global) (Lancet 2020)

UBA: Monitoringbericht 2019 zur Deutschen Anpassungsstrategie an den Klimawandel. Bericht der Interministeriellen Arbeitsgruppe Anpassungsstrategie der Bundesregierung

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Zukunft

Herausforderungen ↑↑↑

Erfordernisse

- Gesundheitswesen: Kritische Infrastruktur
- Patient:innen: klin. Versorgung …
- Arbeitsschutz med. Personal, …
- Ressourcen Hilfsdienste
- Aktionspläne Hitzewellen
- …

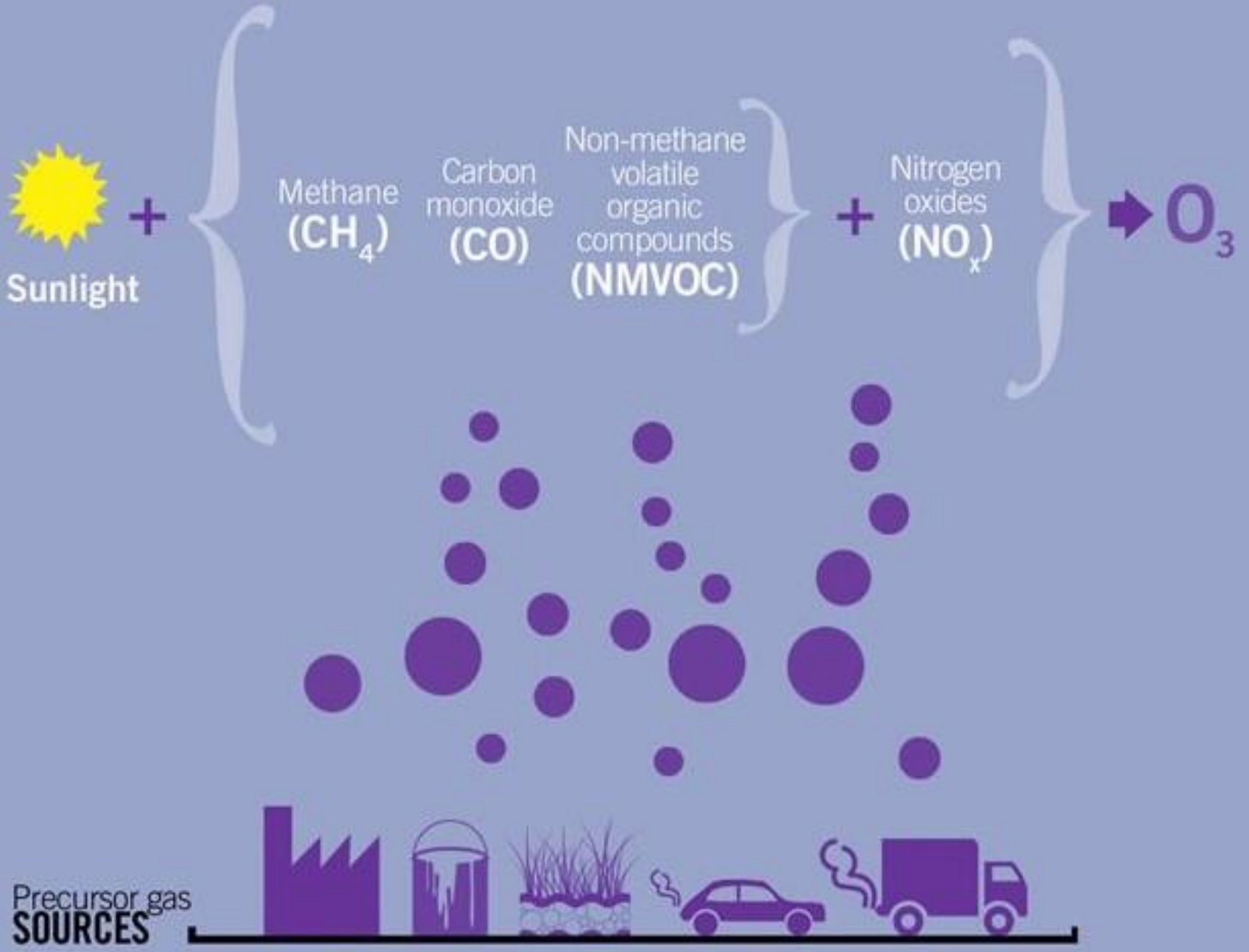
Erftstadt 2021 westlich von Köln

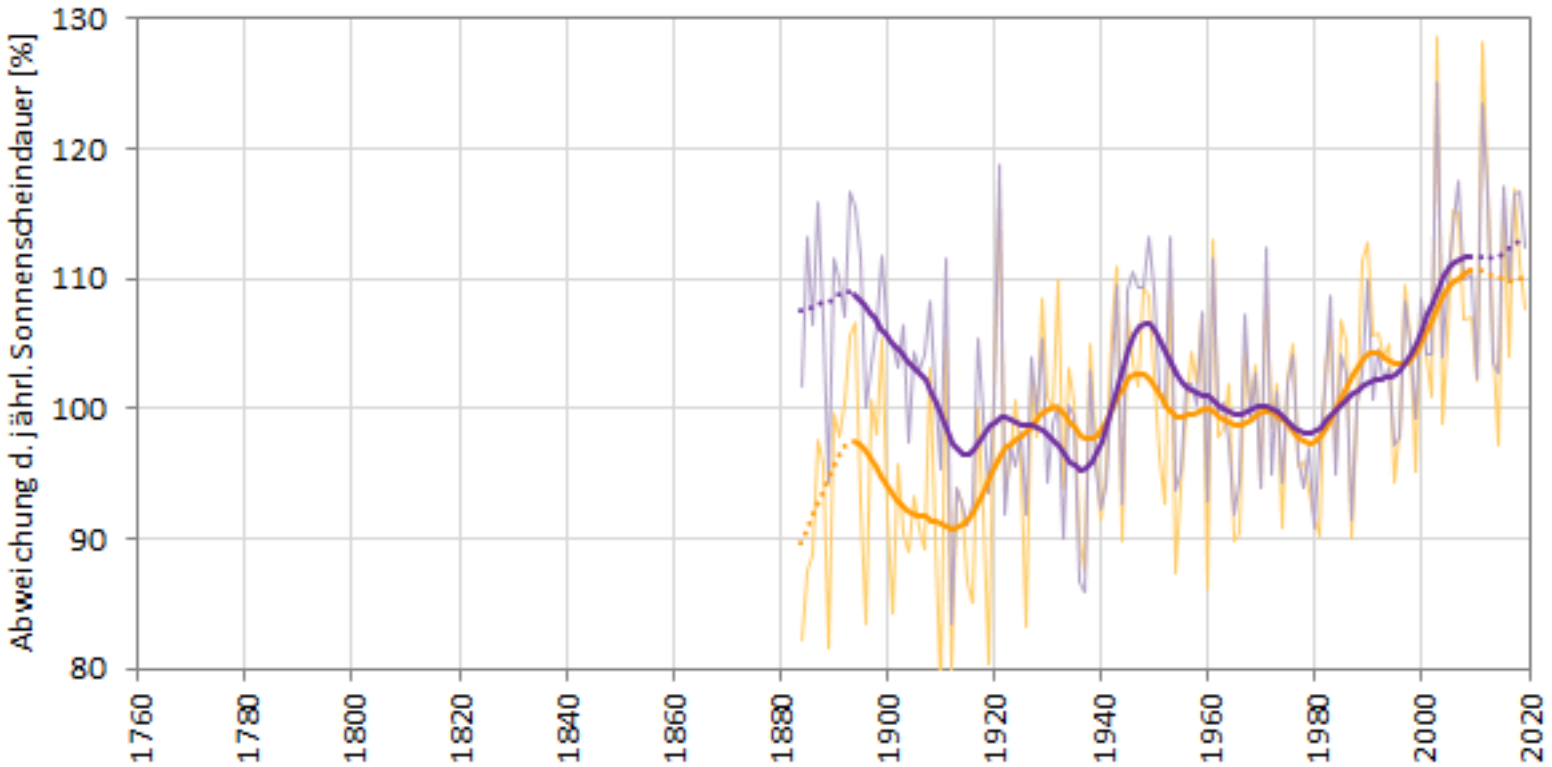

VARTA
albert

Gesundheitsfolgen

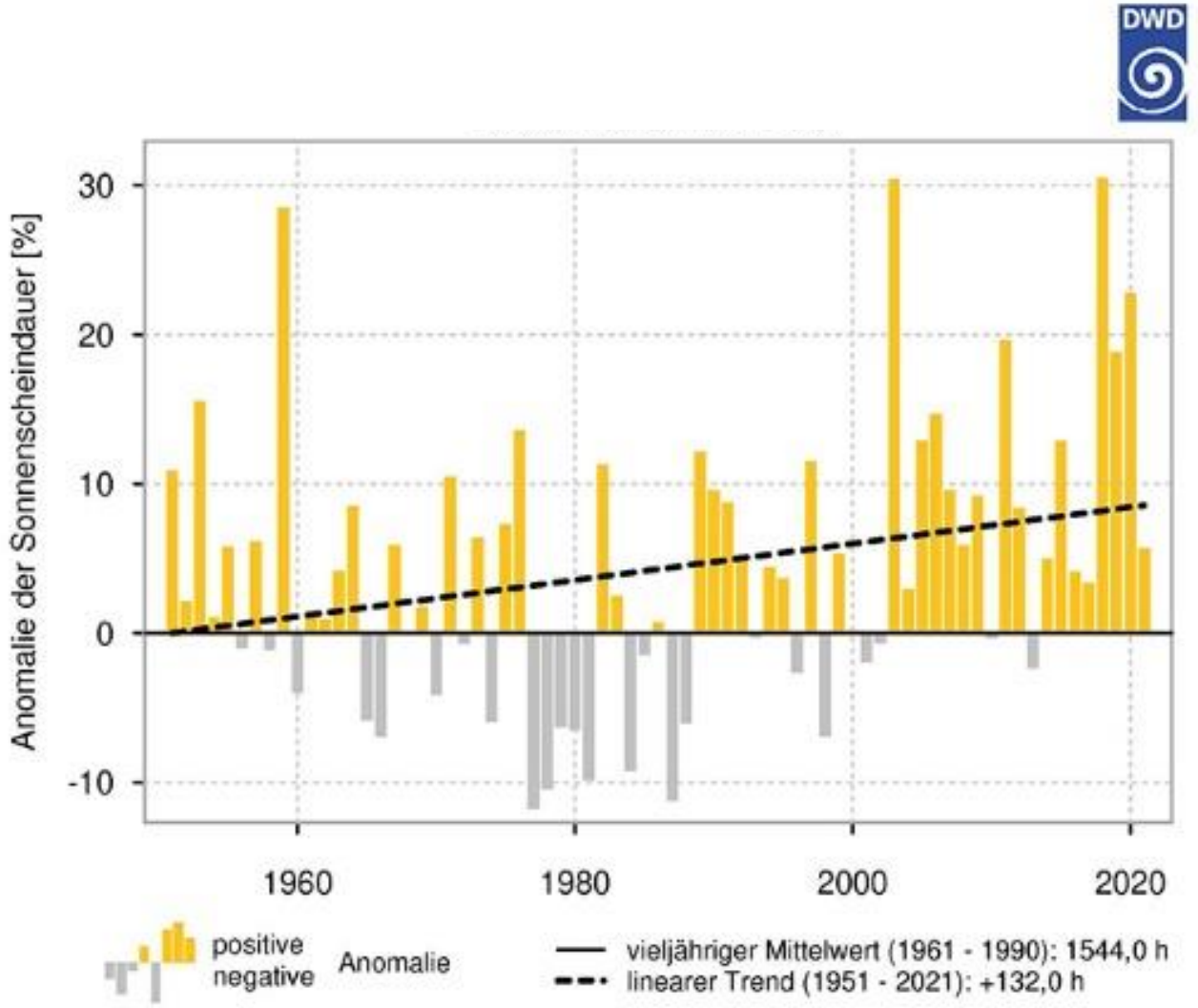
- **Verletzungen/Todesfälle**
- **Gesundheitsgefährdung**
- **Wasserversorgung**
- **Gesundheitsrisiken in Wohnungen**
- **Umsiedelungen**

Indirekte Folgen


Sunlight
+
Methane
(CH4)
Carbon
monoxide
(CO)
Non-methane
volatile
organic
compounds
(NMVOC)
+
Nitrogen
oxides
(NOx)
O3
Precursor gas
SOURCES



*Ö: Mittlere jährliche Sonnenscheindauer (**Tiefland** 1881–2016, violett; **hochalpine Lagen** 1884–2016, orange). Jährliche Abweichungen v. Mittel 1961–1990 (dünne Linien) + deren geglättete Trends (dicke Linien, 21-jähriger Gauß'scher Tiefpassfilter) Graphik nach ZAMG*



D: Anomalie der Sonnenscheindauer Zeitraum 1951 - 2021 (DWD)

Arthropoda

- Invasion/Ansiedlung exotischer Vektoren
- Ausdehnung Siedlungsgebiete heim. Vektoren

Übertragung

Übertragung Krankheitserreger durch

- **„exotische“** Vektoren
- **heimische** Stechmücken

West-Nil-Virus

- Risiko für Depression, kognitive Dysfunktionen
- Verhaltens-/Persönlichkeitsänderungen

- **Ö 2009-2021**: 52 im 44 Inland erworben;
  Erkr.risiko derzeit sehr gering (Dunkelziffer)
- **ECDC Aug 2022**: Italien, aktuelle Saison,
  144 Infektionen, 10 Todesfälle
- **„Es ist nicht auszuschließen, aber schon sehr unwahrscheinlich“ (RKI)**

- Vektoren + Infektionen = Problem
- Gesundheitsrisiken noch als gering einzuschätzen
- Neue Herausforderungen

Wie viele Klimaflüchtlinge kommen auf uns zu?

„Klimawandel wird Migrationsdruck erhöhen, auch auf Österreich“

Klimaschutz

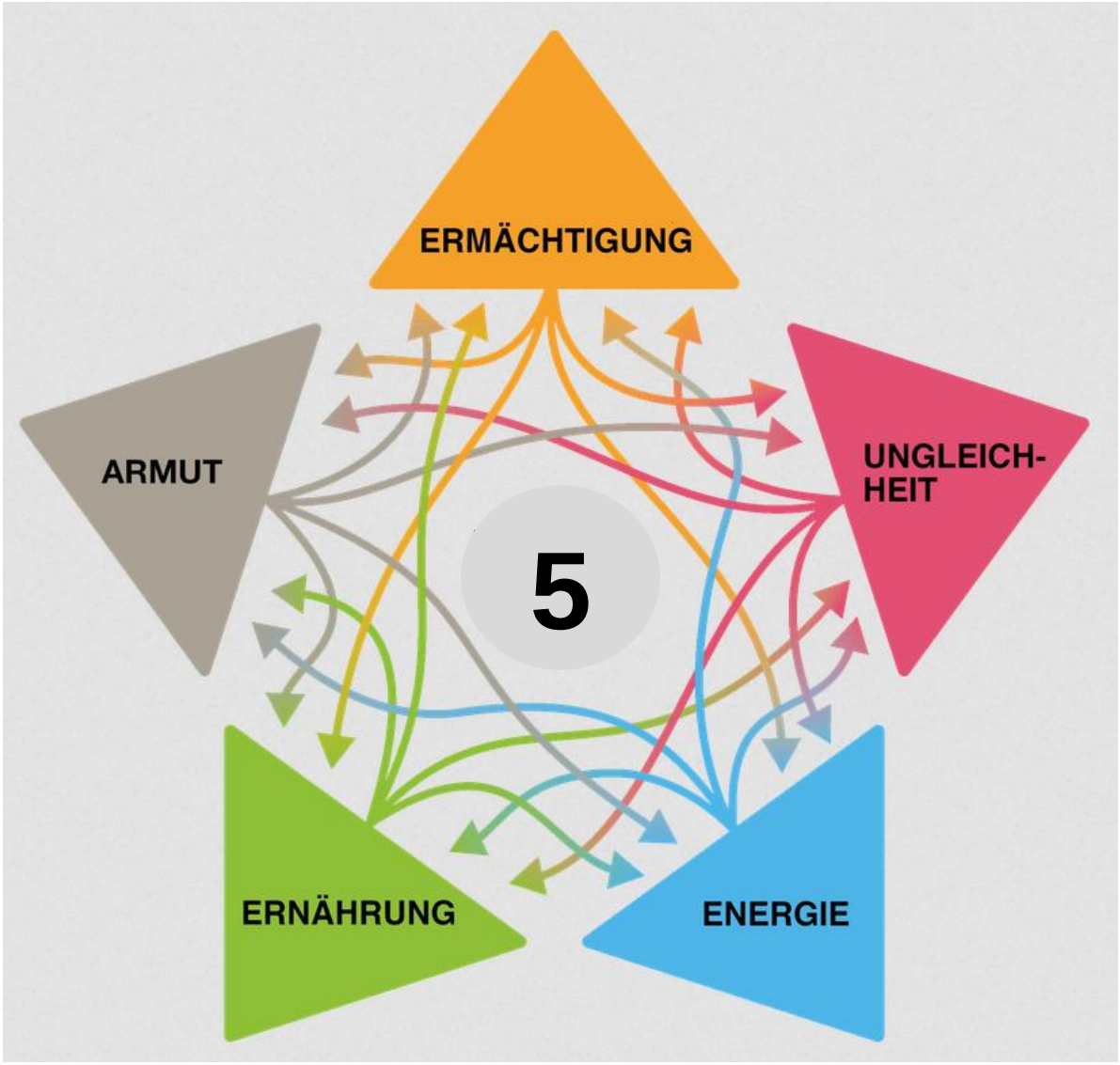
Anpassung

Emissionen ↓


HOSPITAL
CAFETERIA
H
EMERGENCY

Erfordernisse

- Werte überdenken …
- Längerfristig denken …
- Umsetzungsstrategien …
- Maßnahmen umsetzen


ERMÄCHTIGUNG
ARMUT
UNGLEICH-
HEIT
5
ERNÄHRUNG
ENERGIE

Tonnen CO_2-Äquivalent pro Kopf

Climate and health co-benefits from changes in urban mobility and diet: an integrated assessment for Austria

social ecology vienna iff
ALPEN-ADRIA UNIVERSITÄT KLAGENFURT
Wegener Center
MEDICAL UNIVERSITY OF VIENNA
Gesundheit Österreich GmbH
FiBL
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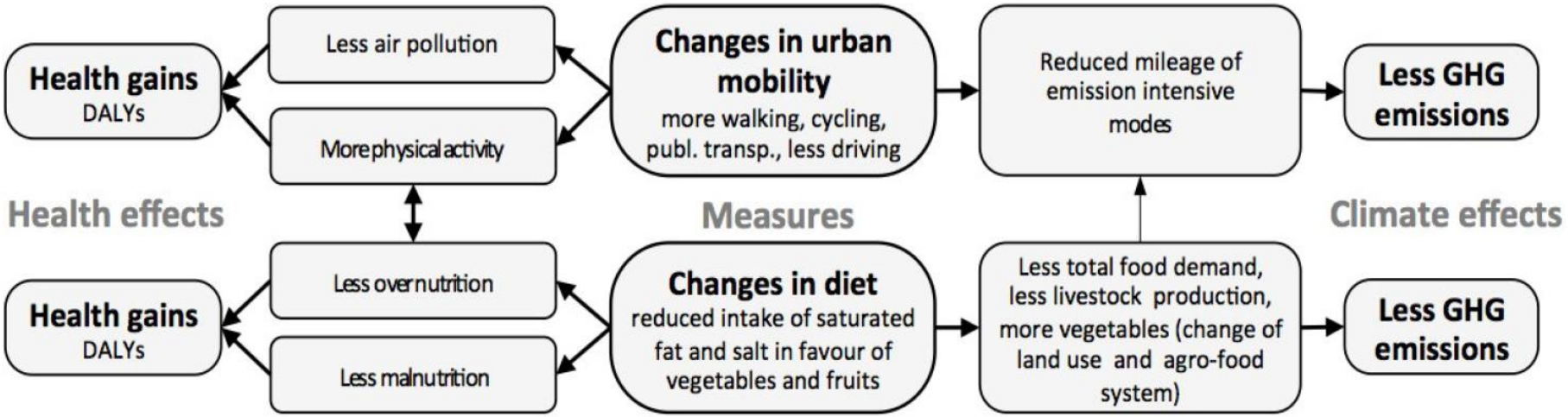
Health gains
DALYs
Less air pollution
More physical activity
Changes in urban mobility
more walking, cycling, publ. transp., less driving
Reduced mileage of emission intensive modes
Less GHG emissions
Health effects
Measures
Climate effects
Health gains
DALYs
Less overnutrition
Less malnutrition
Changes in diet
reduced intake of saturated fat and salt in favour of vegetables and fruits
Less total food demand, less livestock production, more vegetables (change of land use and agro-food system)
Less GHG emissions

- Gesundheitswesen kritische Infrastruktur
- klin. Versorgung von Patient:innen
- Arbeitsschutz für med. Personal, Pflegekräfte …
- Ressourcen für Hilfsdienste
- ÖGD – Schlüsselrolle

Umwelt und Klimawandel – eine medizinische Krise?

Danke für Ihre Aufmerksamkeit!