Clima ed Energia

Franco Battaglia
Prof. of Chemical Physics
Clintel-Italia

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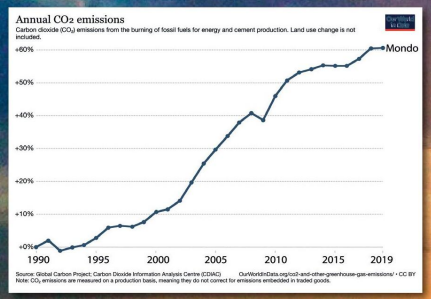
Franco Battaglia

THERE IS NO CLIMATE EMERGENCY

The Petiton Sent to the UN by 1000 World Scientists

First Signatory: Ivar Giaever, Physics Nobel Laureate



21mo SECOLO

OPEN ACCESS
IOP PUBLISHING
ENVIRONMENTAL RESEARCH LETTERS
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doi:10.1088/1748-9326/8/2/024024

Quantifying the consensus on anthropogenic global warming in the scientific literature

John Cook[1,2,3], Dana Nuccitelli[2,4], Sarah A Green[5], Mark Richardson[6], Bärbel Winkler[2], Rob Painting[2], Robert Way[7], Peter Jacobs[8] and Andrew Skuce[2,9]

[1] Global Change Institute, University of Queensland, Australia
[2] Skeptical Science, Brisbane, Queensland, Australia
[3] School of Psychology, University of Western Australia, Australia
[4] Tetra Tech, Incorporated, McClellan, CA, USA
[5] Department of Chemistry, Michigan Technological University, USA
[6] Department of Meteorology, University of Reading, UK
[7] Department of Geography, Memorial University of Newfoundland, Canada
[8] Department of Environmental Science and Policy, George Mason University, USA
[9] Salt Spring Consulting Ltd, Salt Spring Island, BC, Canada

E-mail: j.cook3@uq.edu.au

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Abstract
We analyze the evolution of the scientific consensus on anthropogenic global warming (AGW) in the peer-reviewed scientific literature, examining 11 944 climate abstracts from 1991–2011 matching the topics 'global climate change' or 'global warming'. We find that 66.4% of abstracts expressed no position on AGW, 32.6% endorsed AGW, 0.7% rejected AGW and 0.3% were uncertain about the cause of global warming. Among abstracts expressing a position on AGW, 97.1% endorsed the consensus position that humans are causing global warming. In a second phase of this study, we invited authors to rate their own papers. Compared to abstract ratings, a smaller percentage of

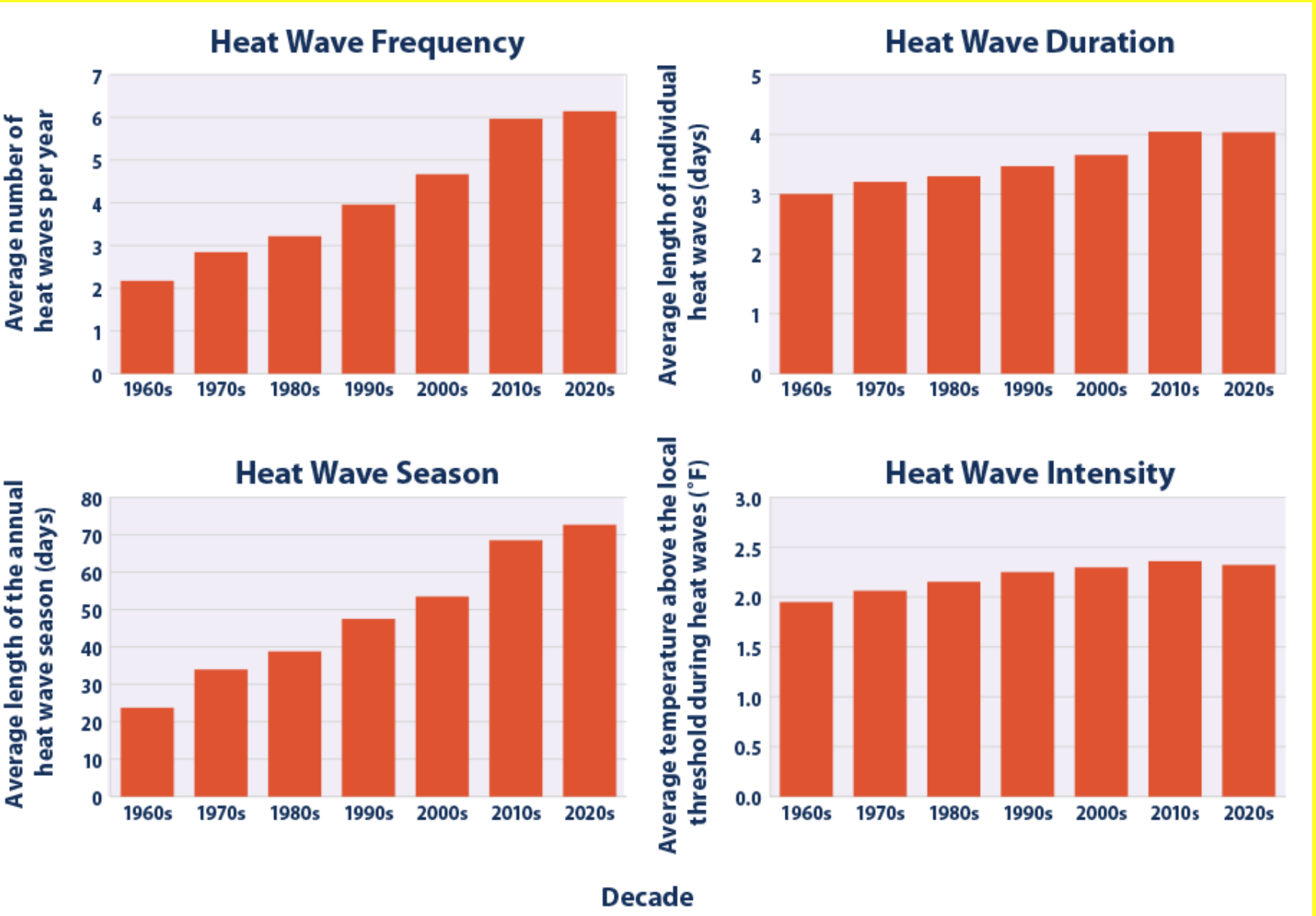
Table 6. Number of hurricanes by category to strike the mainland U.S. each decade. (Updated from Blake et al., 2007)

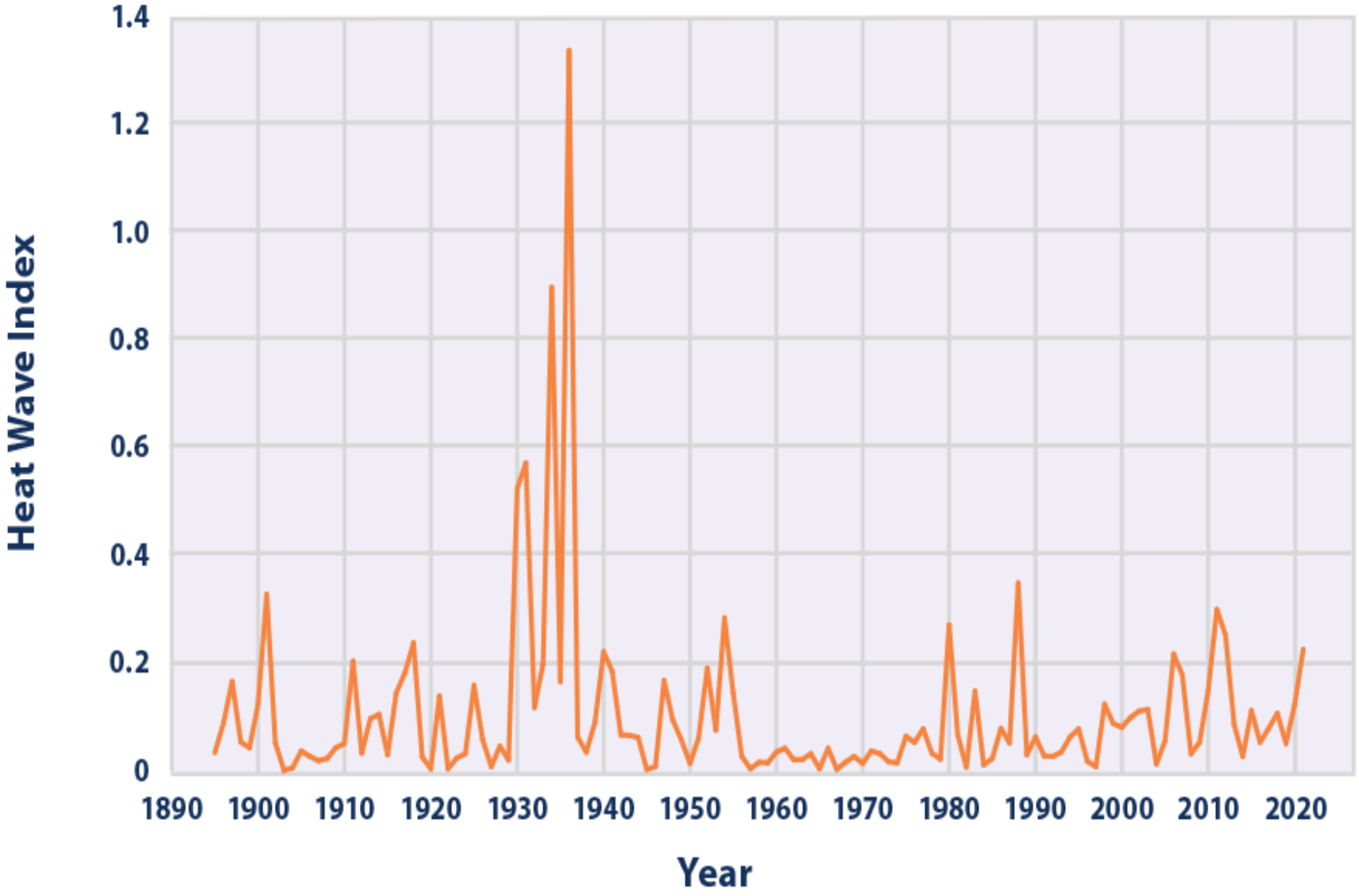
	Category					ALL	Major
DECADE	1	2	3	4	5	1,2,3,4,5	3,4,5
1851-1860	7	5	5	1	0	18	6
1861-1870	8	6	1	0	0	15	1
1871-1880	7	6	7	0	0	20	7
1881-1890	8	9	4	1	0	22	5
1891-1900	8	5	5	3	0	21	8
1901-1910	10	4	4	0	0	18	4
1911-1920	8	5	4	3	0	20	7
1921-1930	8	2	3	2	0	15	5
1931-1940	4	7	6	1	1	19	8
1941-1950	8	6	9	1	0	24	10
1951-1960	8	1	6	3	0	18	9
1961-1970	3	5	4	1	1	14	6
1971-1980	6	2	4	0	0	12	4
1981-1990	9	2	3	1	0	15	4
1991-2000	3	6	4	0	1	14	5
2001-2010	8	4	6	1	0	19	7
1851-2010	113	75	75	18	3	284	96
Average per decade	7,1	4,7	4,7	1,1	0,2	17,8	6,0

Note: Only the highest category to affect the U.S. is used

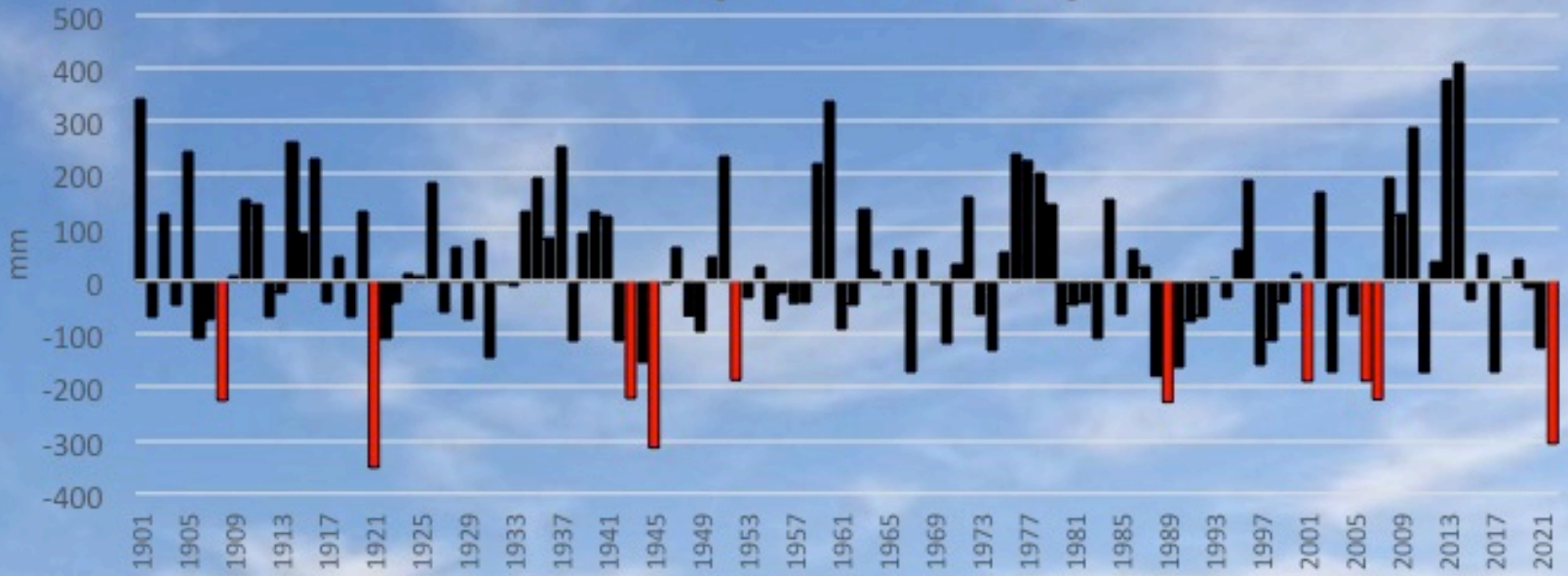
There has been no increase of extreme weather events

URAGANI IN AMERICA	1850-1930	1931-2010
FORZA 4	10	8
FORZA 2+3+4	85	83
TUTTI	149	135


Heat Wave Frequency
Average number of heat waves per year
0
1
2
3
4
5
6
7
1960s
1970s
1980s
1990s
2000s
2010s
2020s
Heat Wave Duration
Average length of individual heat waves (days)
0
1
2
3
4
5
1960s
1970s
1980s
1990s
2000s
2010s
2020s
Heat Wave Season
Average length of the annual heat wave season (days)
0
10
20
30
40
50
60
70
80
1960s
1970s
1980s
1990s
2000s
2010s
2020s
Heat Wave Intensity
Average temperature above the local threshold during heat waves (°F)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1960s
1970s
1980s
1990s
2000s
2010s
2020s
Decade

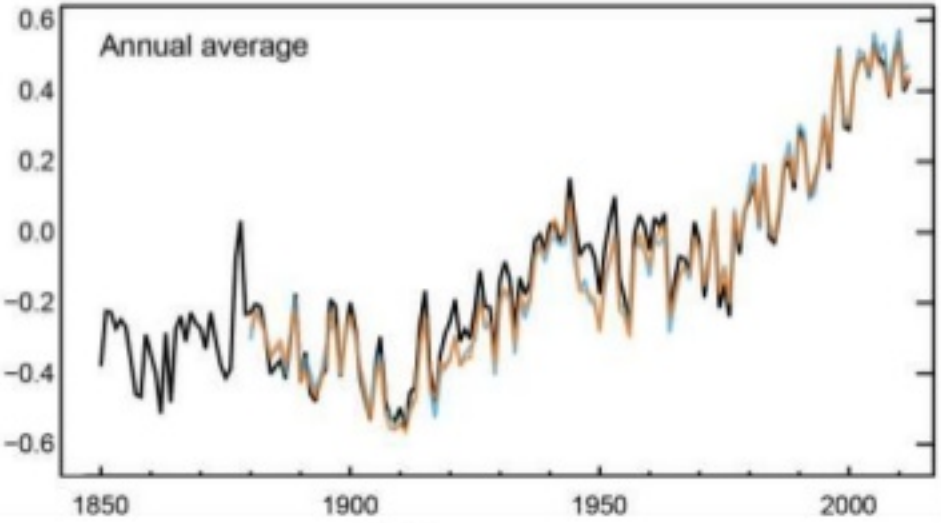

Heat Wave Index
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year

Scostamento delle precipitazioni dalla media 1961-1990



Humans are changing the climate

It is extremely likely that we are the dominant cause of warming since the mid-20th century

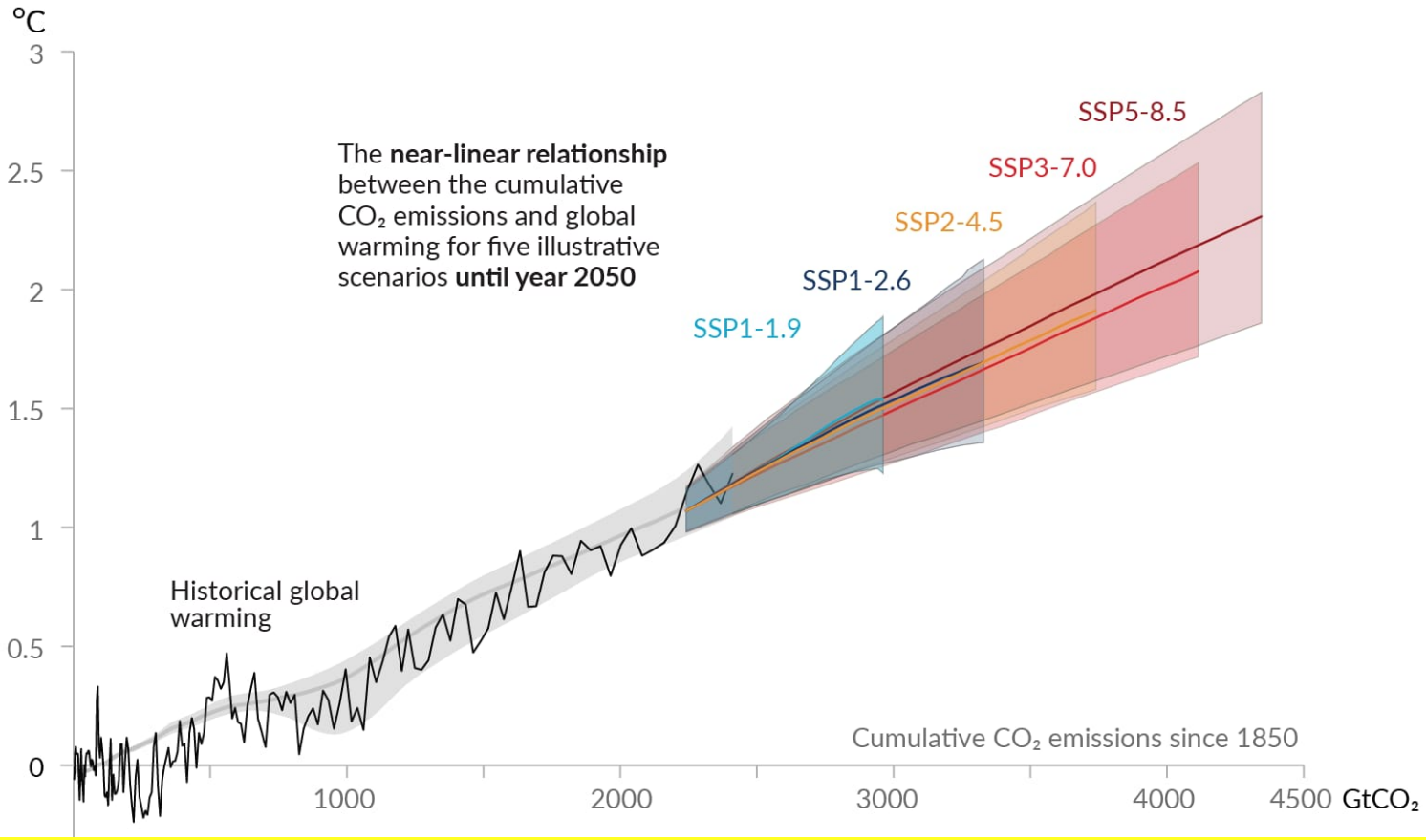


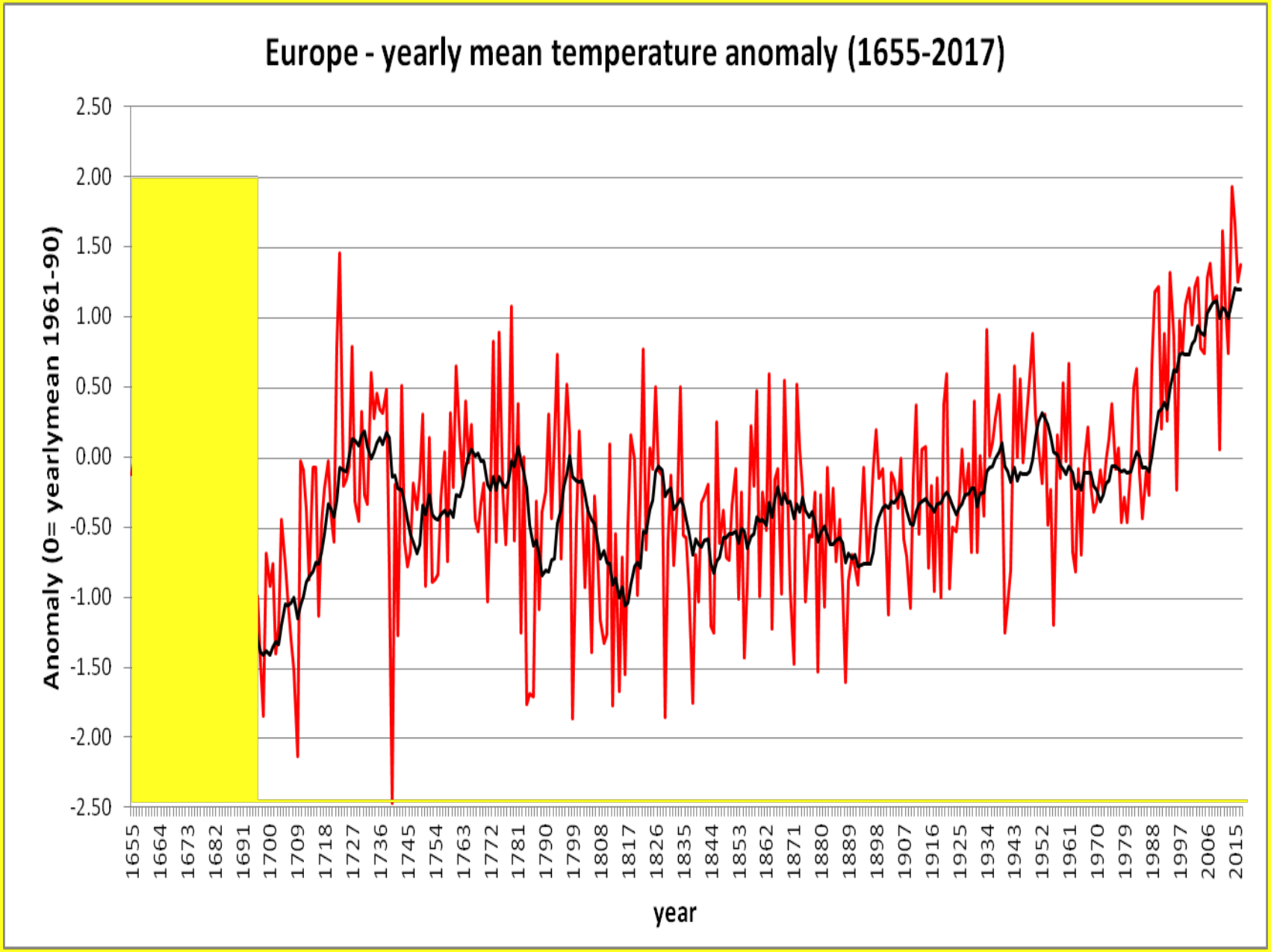
Globally averaged combined land and ocean surface temperatures

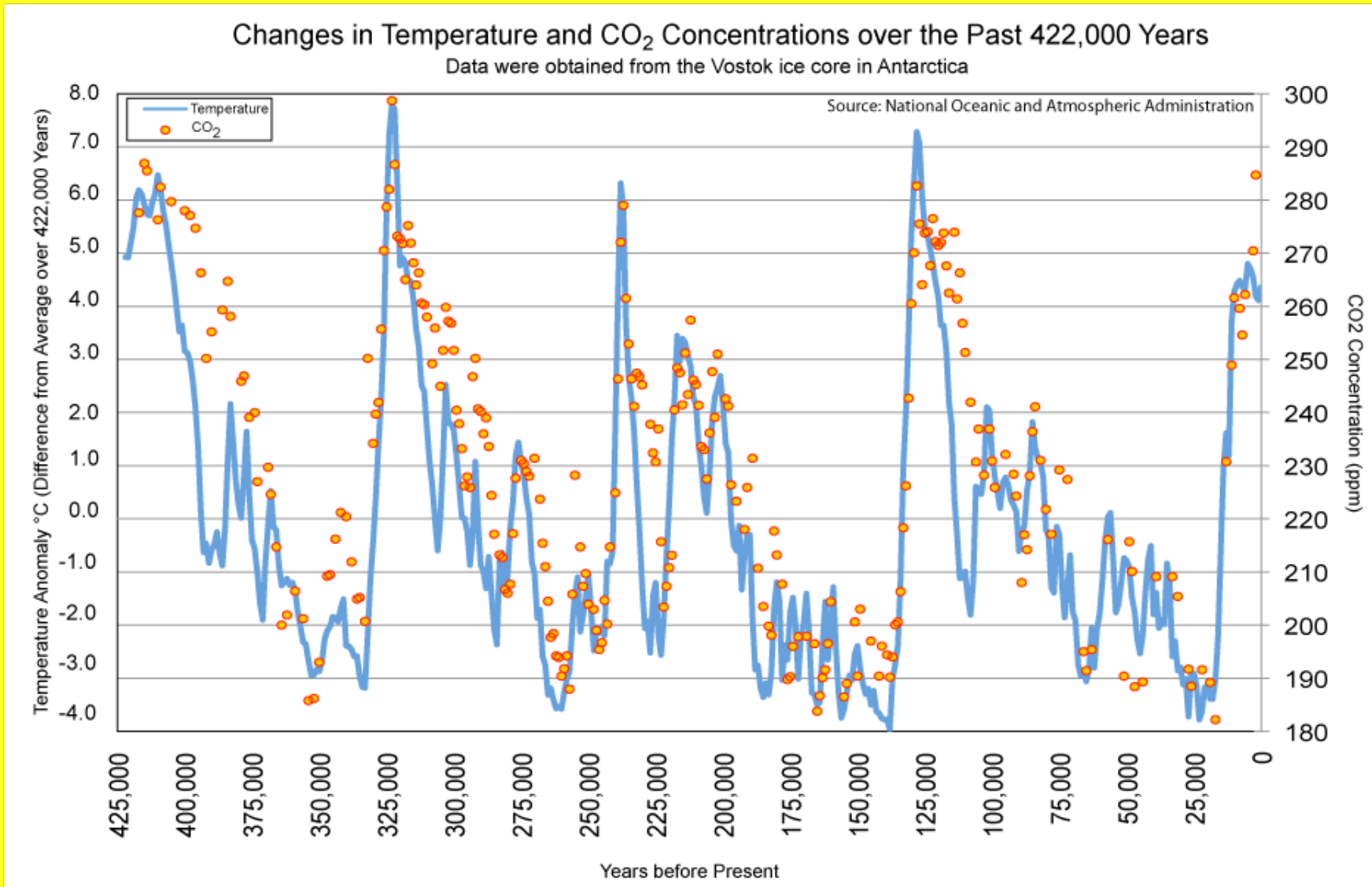
AR5 WGI SPM

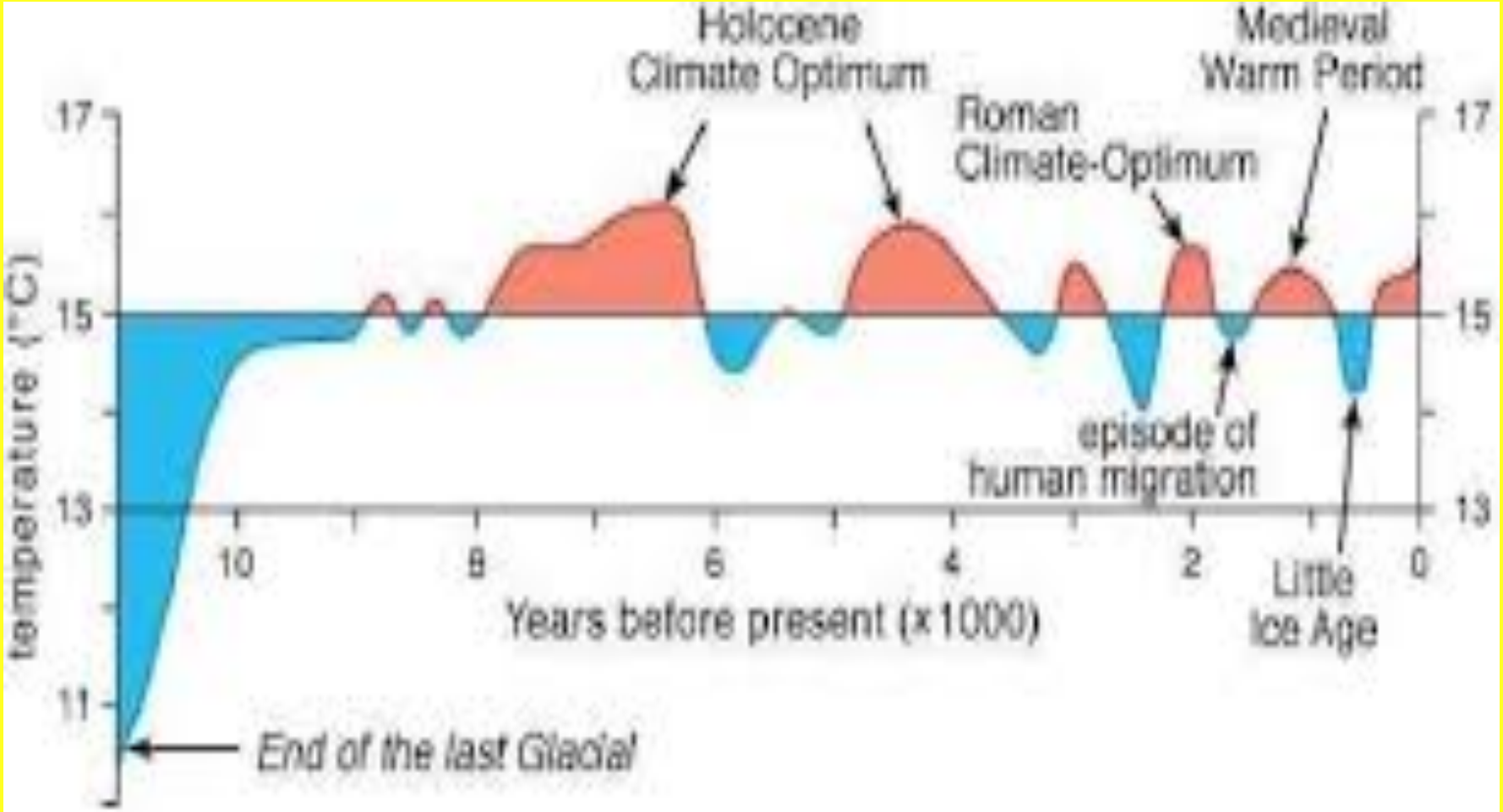
Every tonne of CO_2 emissions adds to global warming

Global surface temperature increase since 1850–1900 (°C) as a function of cumulative CO_2 emissions ($GtCO_2$)

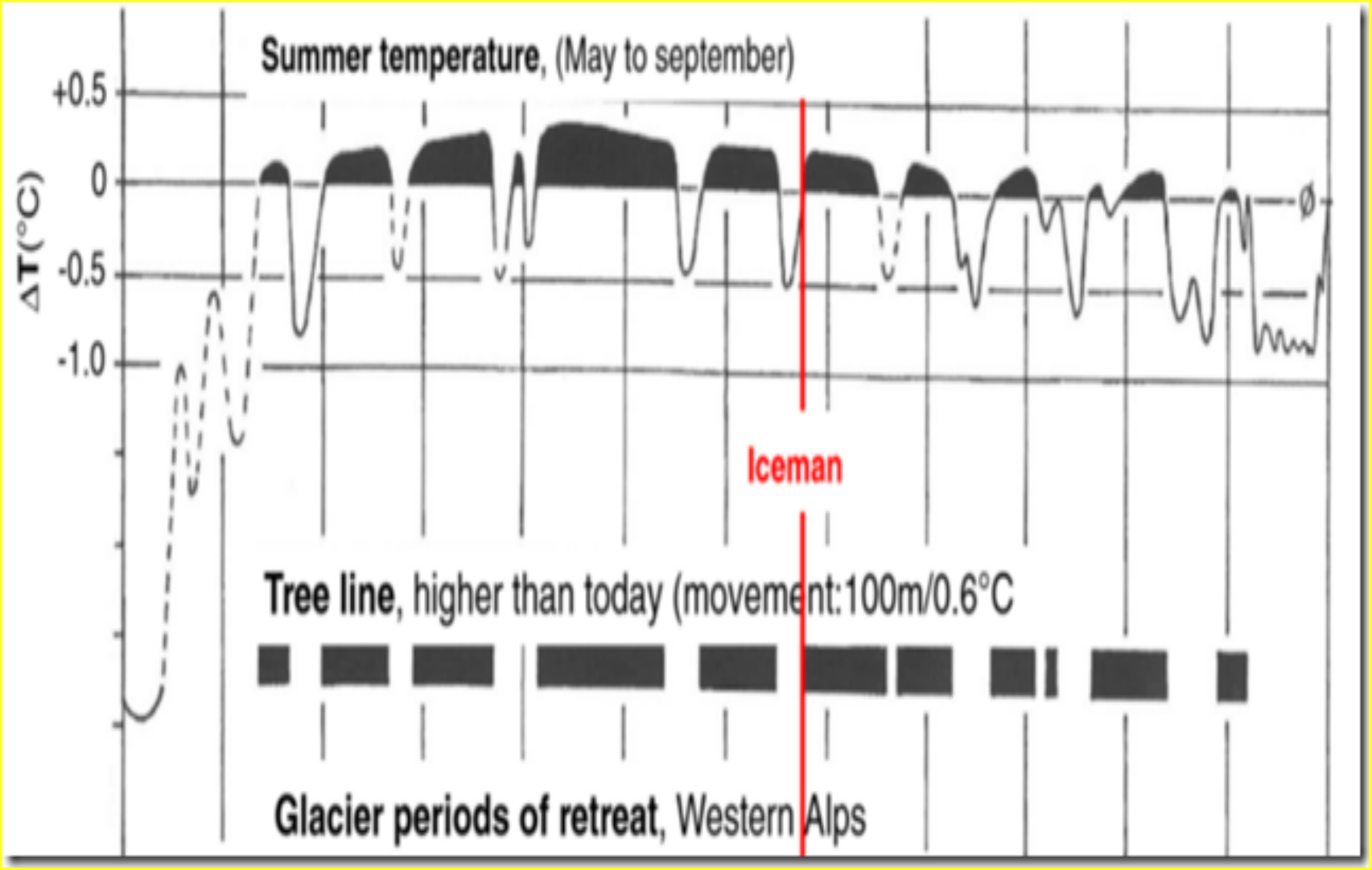


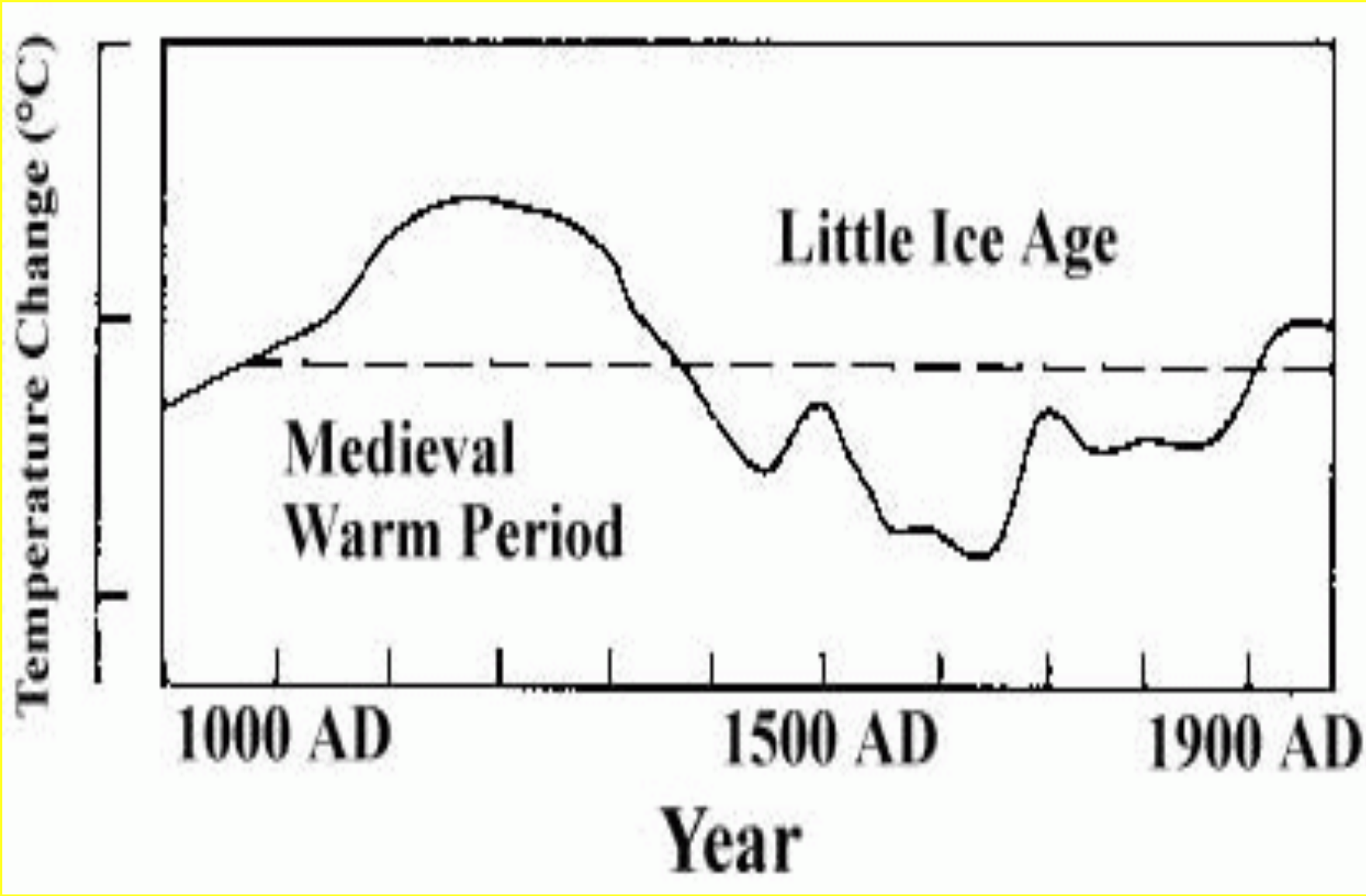

Europe - yearly mean temperature anomaly (1655-2017)
Anomaly (0= yearlymean 1961-90)
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
1655
1664
1673
1682
1691
1700
1709
1718
1727
1736
1745
1754
1763
1772
1781
1790
1799
1808
1817
1826
1835
1844
1853
1862
1871
1880
1889
1898
1907
1916
1925
1934
1943
1952
1961
1970
1979
1988
1997
2006
2015
year


Changes in Temperature and CO_2 Concentrations over the Past 422,000 Years
Data were obtained from the Vostok ice core in Antarctica
Source: National Oceanic and Atmospheric Administration
Temperature
CO_2
Temperature Anomaly °C (Difference from Average over 422,000 Years)
CO2 Concentration (ppm)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
300
290
280
270
260
250
240
230
220
210
200
190
180
425,000
400,000
375,000
350,000
325,000
300,000
275,000
250,000
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
25,000
0
Years before Present



Average near-surface temperatures of the northern hemispere during the past 11.000 years (after Dansgaard et al., 1969, and Schönwiese, 1995)


Summer temperature, (May to september)
+0.5
0
-0.5
-1.0
ΔT(°C)
Iceman
Tree line, higher than today (movement:100m/0.6°C
Glacier periods of retreat, Western Alps


Temperature Change (°C)
Little Ice Age
Medieval
Warm Period
1000 AD
1500 AD
1900 AD
Year

A NEW RECONSTRUCTION OF TEMPERATURE VARIABILITY IN THE EXTRA-TROPICAL NORTHERN HEMISPHERE

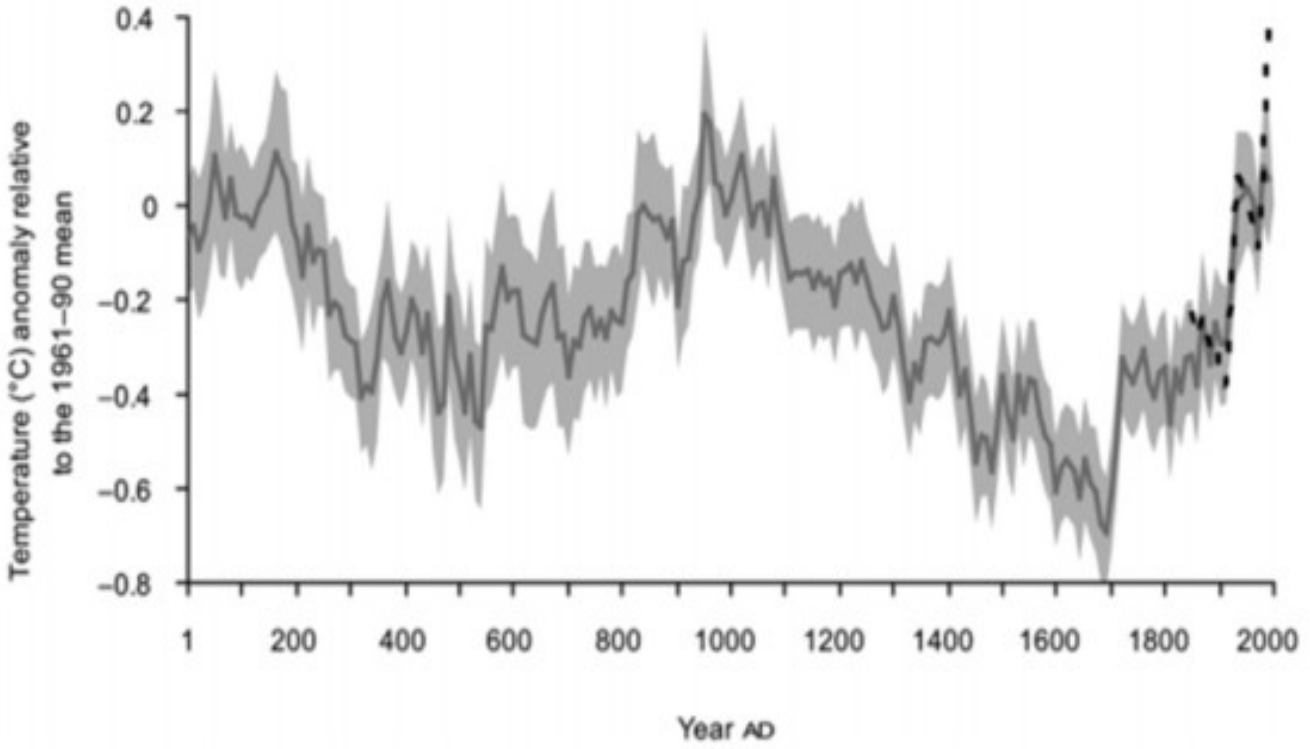
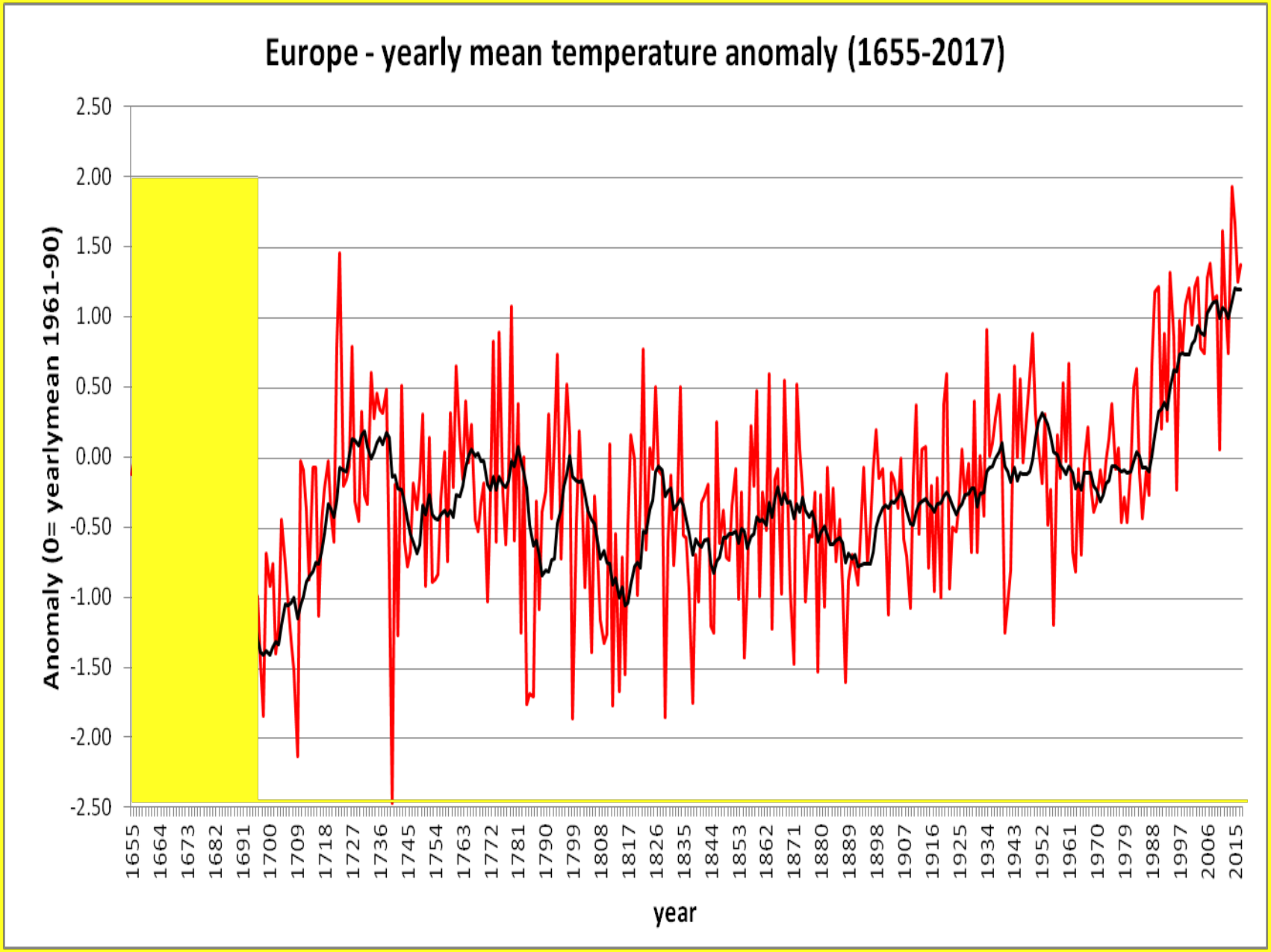
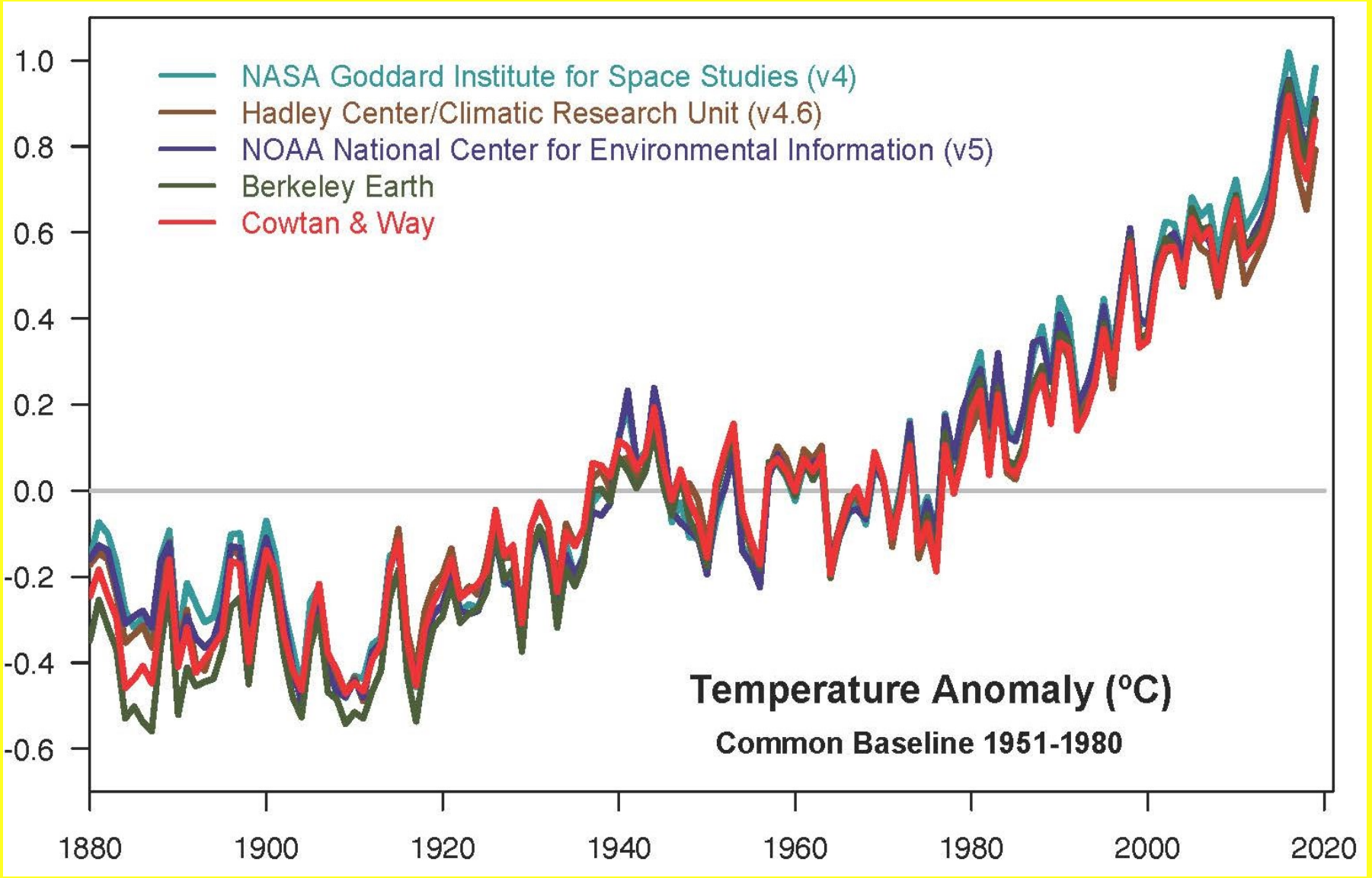


Fig. 3. Estimations of extra-tropical Northern Hemisphere (90–30°N) decadal mean temperature variations (dark grey line) AD 1–1999 relative to the 1961–1990 mean instrumental temperature from the variance adjusted CRUTEM3+HadSST2 90–30°N record (black dotted line showing decadal mean values AD 1850–1999) with 2 standard deviation error bars (light grey shading).


Greenland
United States
Mexico
Venezuela
Brazil
Bolivia
Chile
Argentina
Russia
Mongolia
China
South Korea
Japan
Iraq
Algeria
Chad
DR Congo
South Africa
Madagascar
Thailand
Papua New Guinea
North Atlantic Ocean
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
Southern Ocean
Google My Maps
Map data ©2017
Terms
2,000 km


PORTA
MENTE
NO

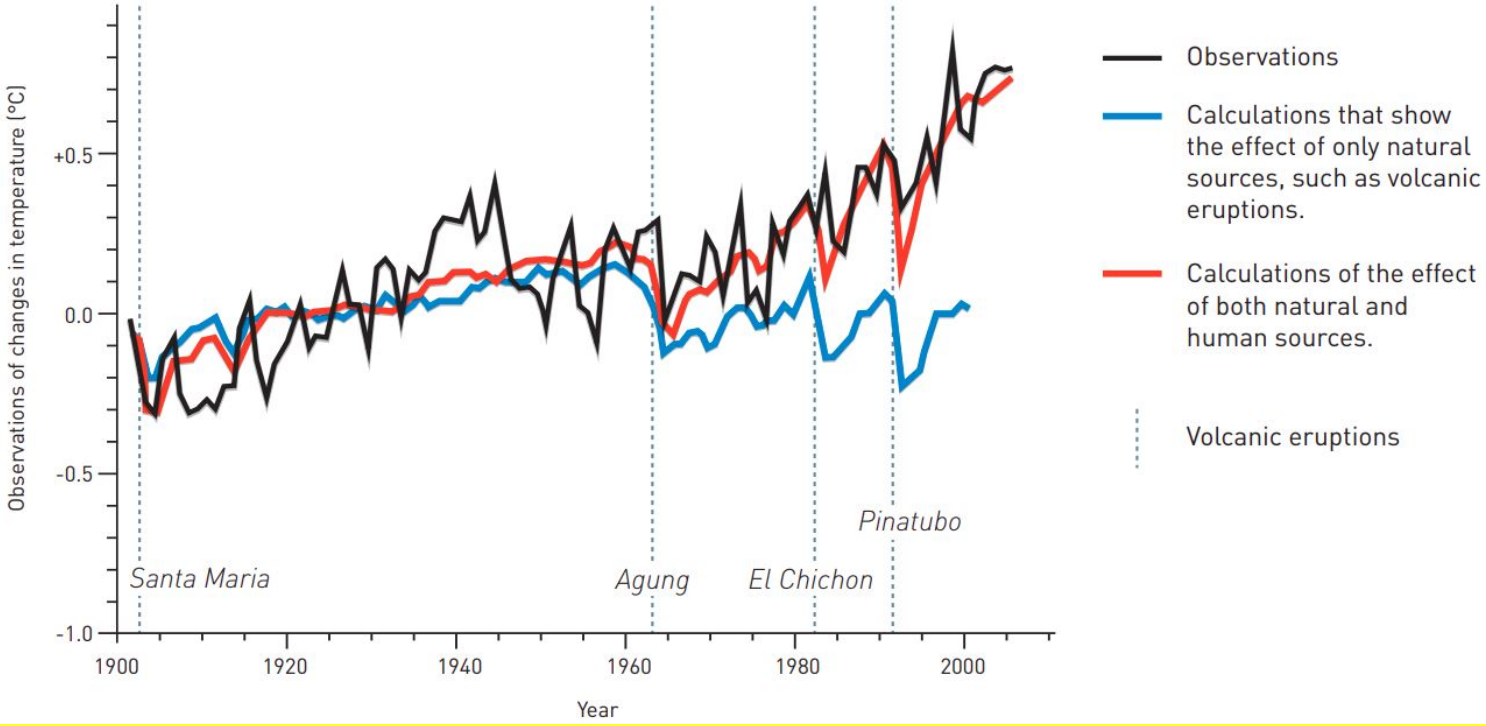

Europe - yearly mean temperature anomaly (1655-2017)
Anomaly (0= yearlymean 1961-90)
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
1655
1664
1673
1682
1691
1700
1709
1718
1727
1736
1745
1754
1763
1772
1781
1790
1799
1808
1817
1826
1835
1844
1853
1862
1871
1880
1889
1898
1907
1916
1925
1934
1943
1952
1961
1970
1979
1988
1997
2006
2015
year

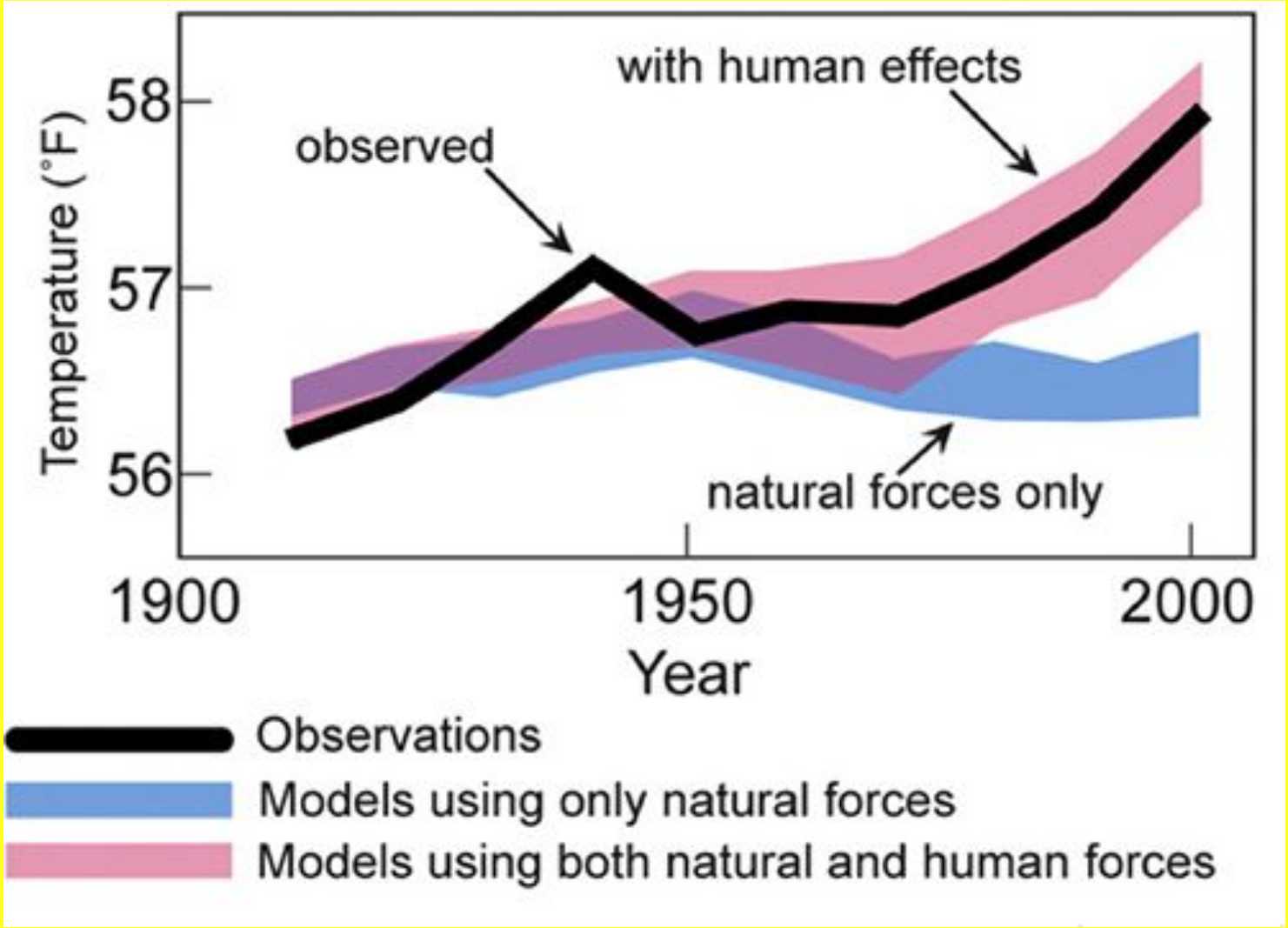

NASA Goddard Institute for Space Studies (v4)
Hadley Center/Climatic Research Unit (v4.6)
NOAA National Center for Environmental Information (v5)
Berkeley Earth
Cowtan & Way
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
1880
1900
1920
1940
1960
1980
2000
2020
Temperature Anomaly (°C)
Common Baseline 1951-1980

Science & Mechanics November 1969

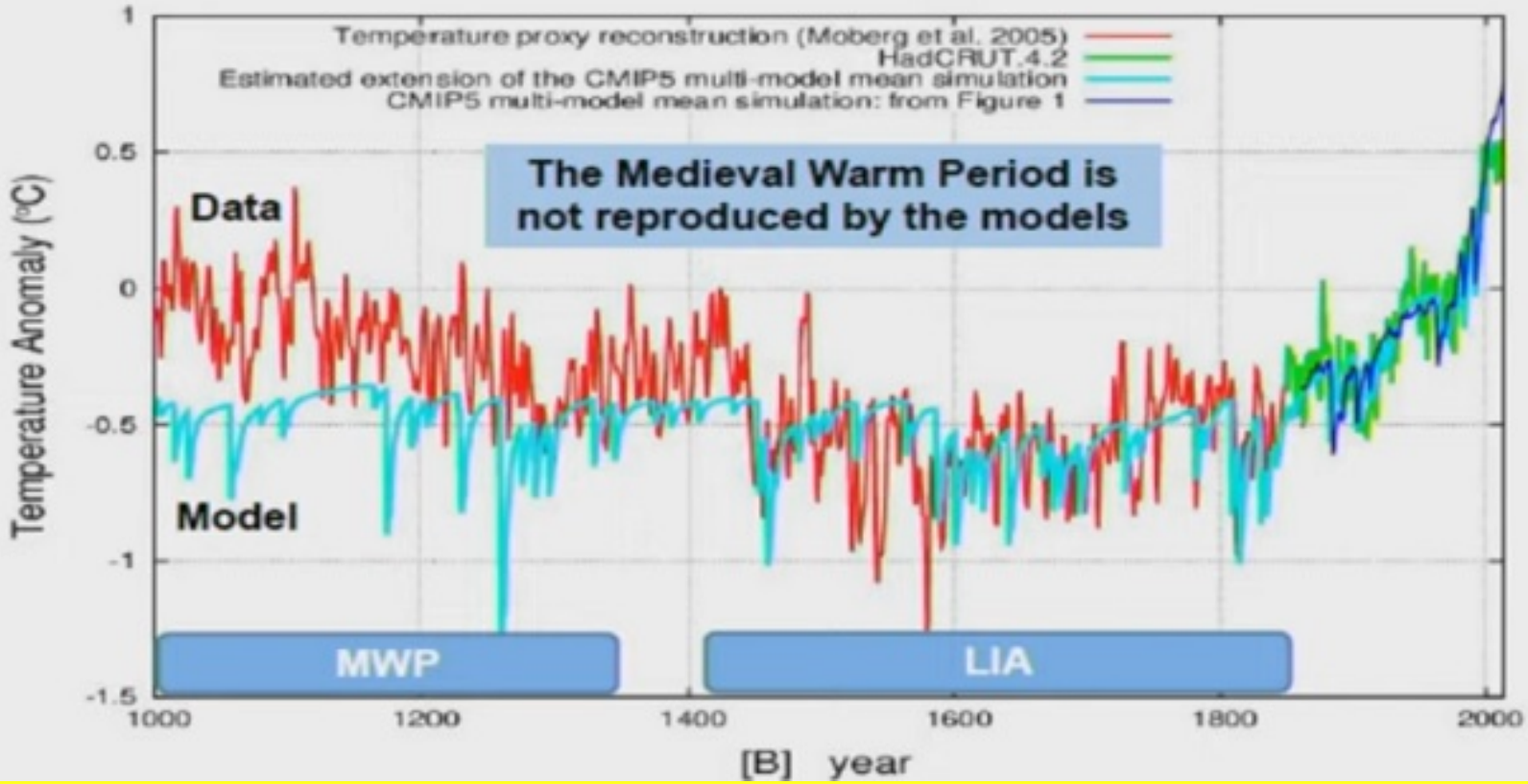
Identifying fingerprints in the climate

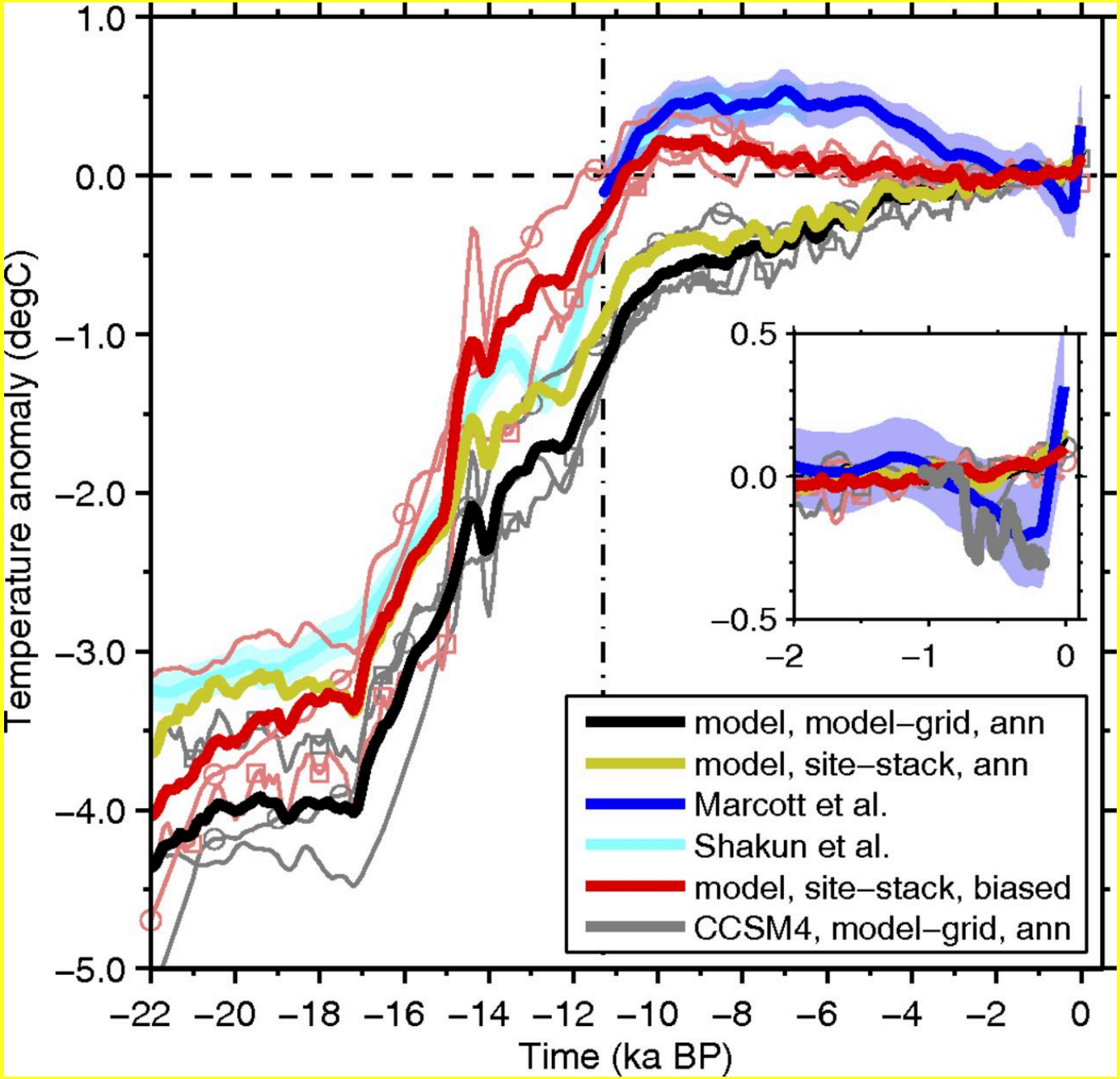
Klaus Hasselmann developed methods for distinguishing between natural and human causes (fingerprints) of atmospheric heating. Comparison between changes in the mean temperature in relation to the average for 1901–1950 (°C).

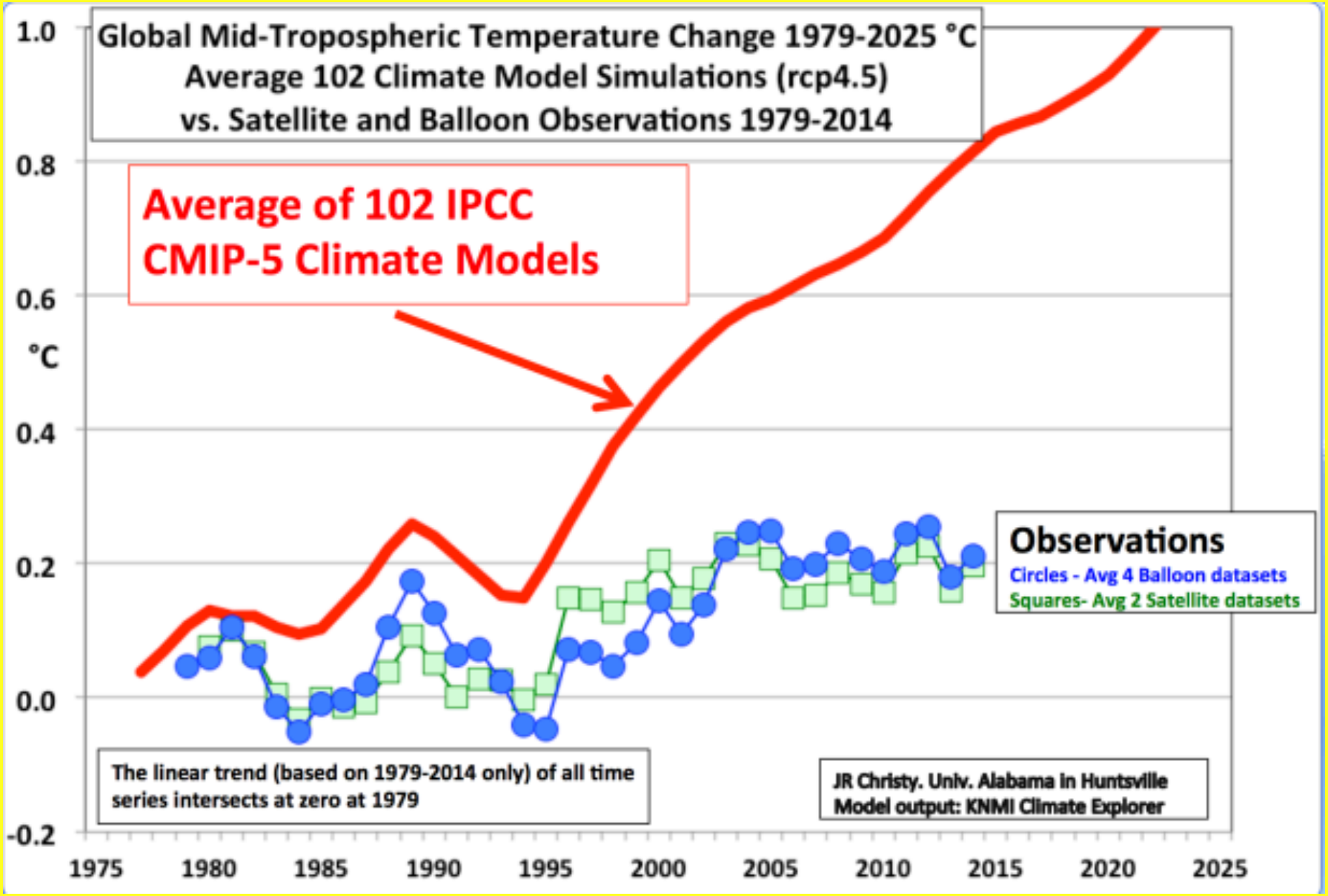


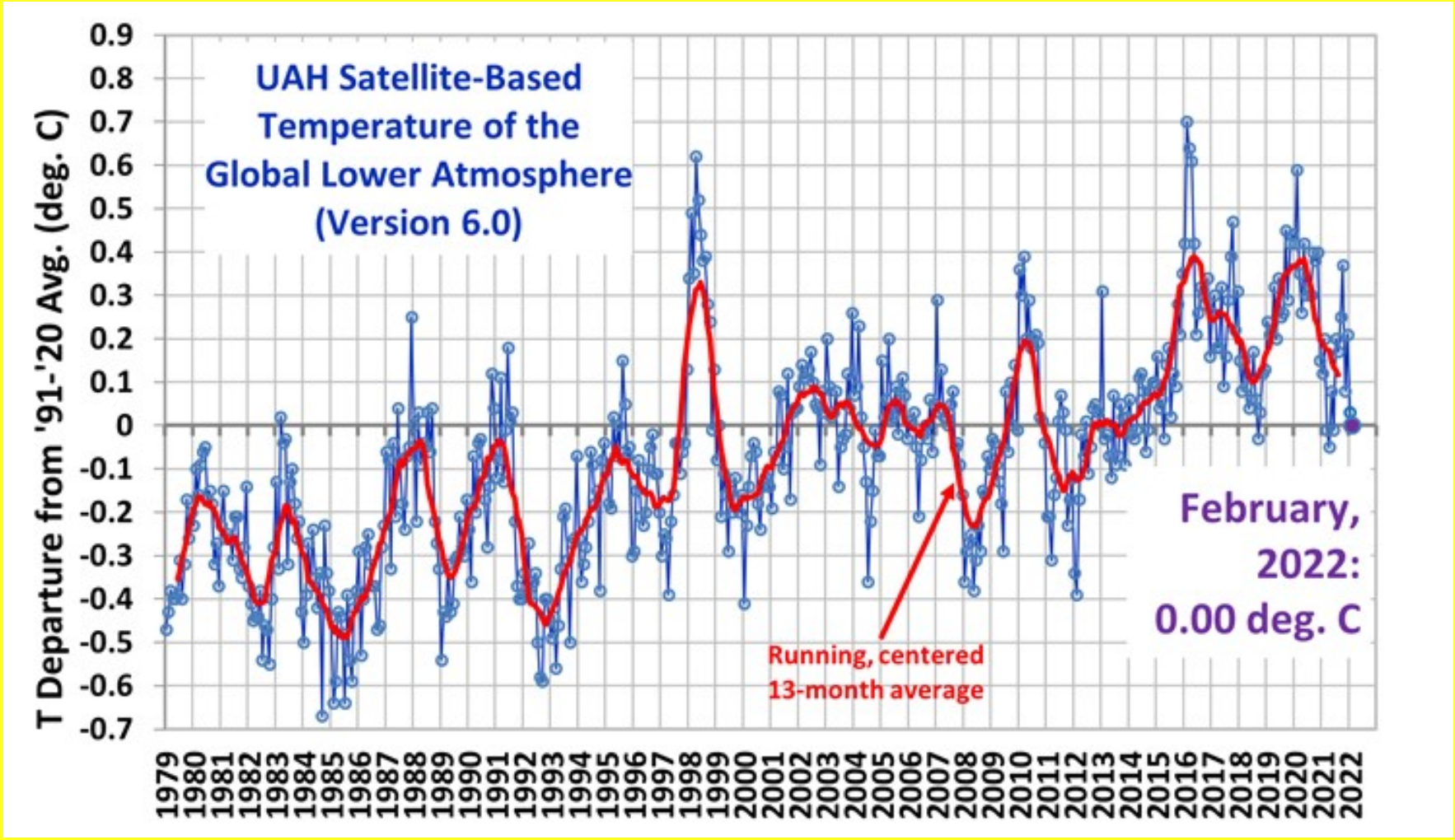

with human effects
observed
natural forces only
Temperature (°F)
58
57
56
1900
1950
2000
Year
Observations
Models using only natural forces
Models using both natural and human forces

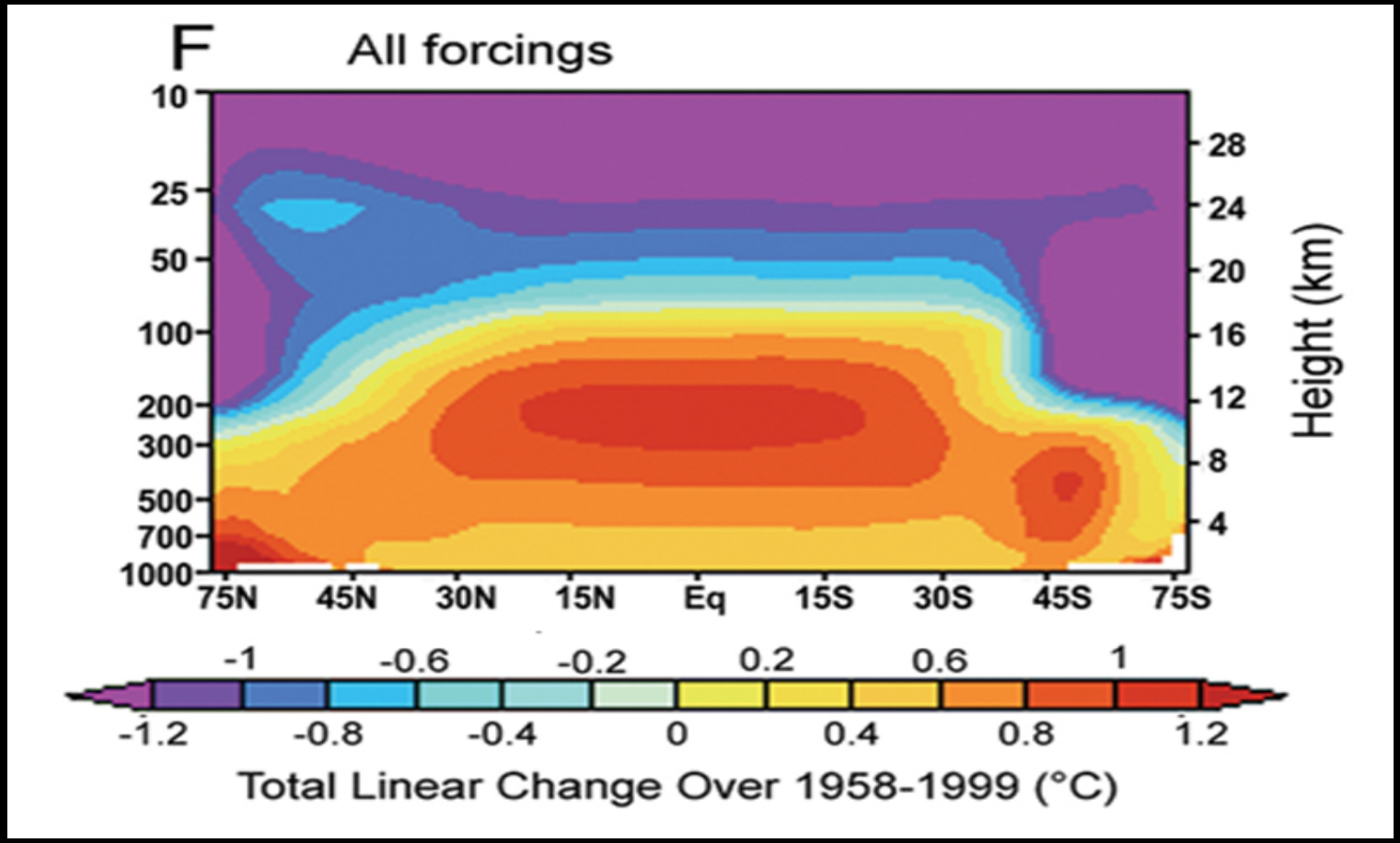
IPCC Models (cyan & blue) vs Temperature (red e green)

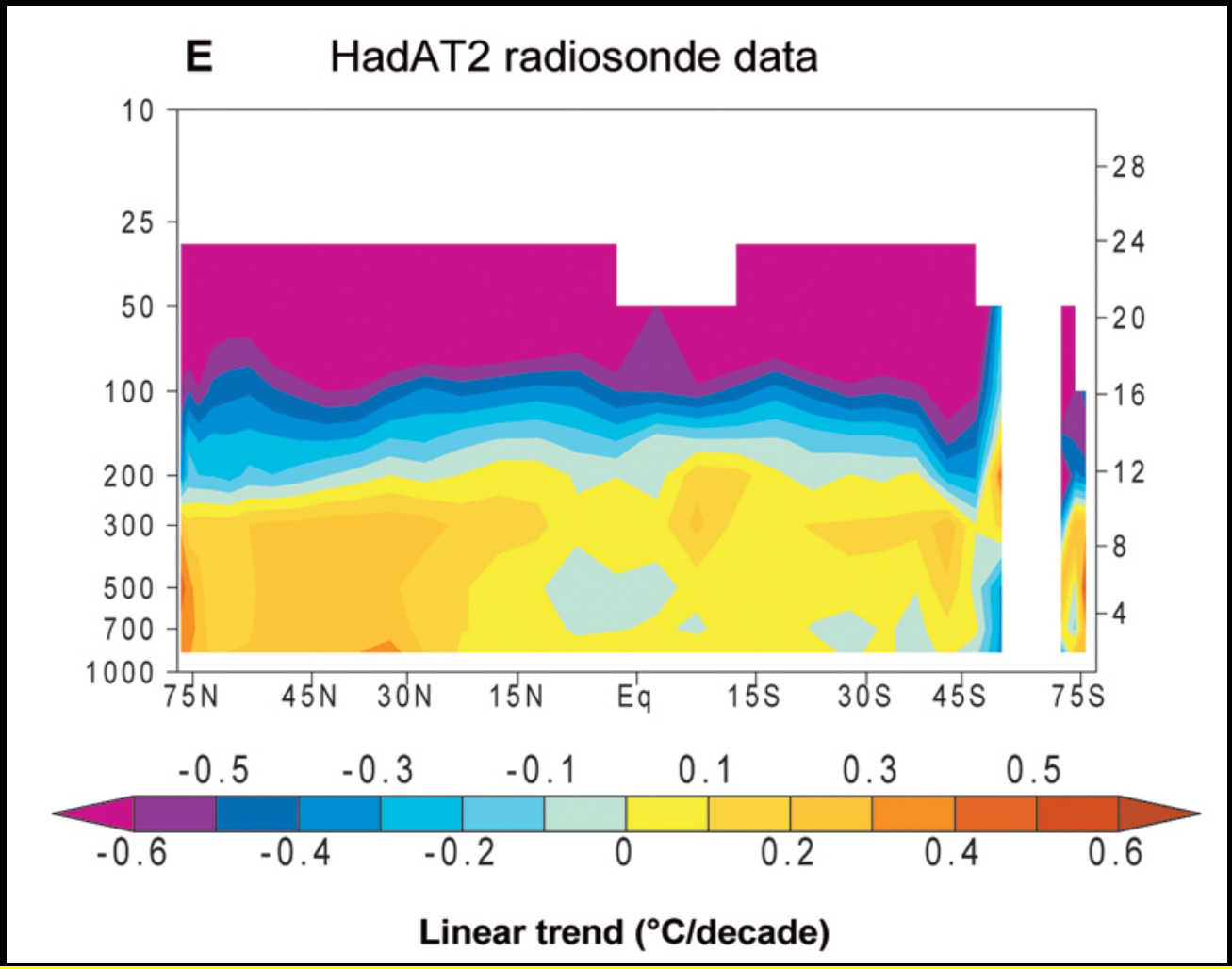


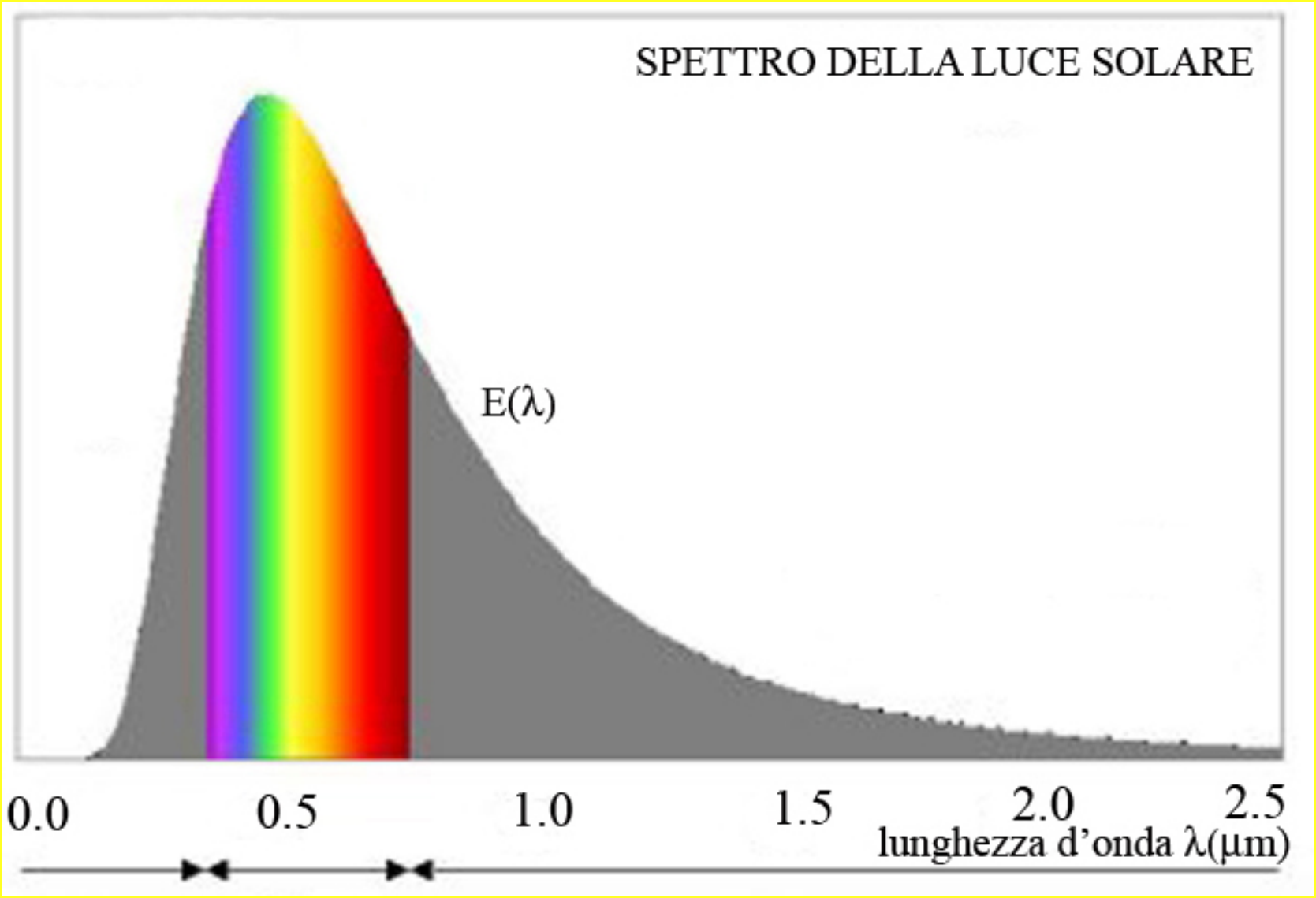

1.0
0.0
−1.0
−2.0
−3.0
−4.0
−5.0
Temperature anomaly (degC)
−22
−20
−18
−16
−14
−12
−10
−8
−6
−4
−2
0
Time (ka BP)
0.5
0.0
−0.5
−2
−1
0
model, model−grid, ann
model, site−stack, ann
Marcott et al.
Shakun et al.
model, site−stack, biased
CCSM4, model−grid, ann

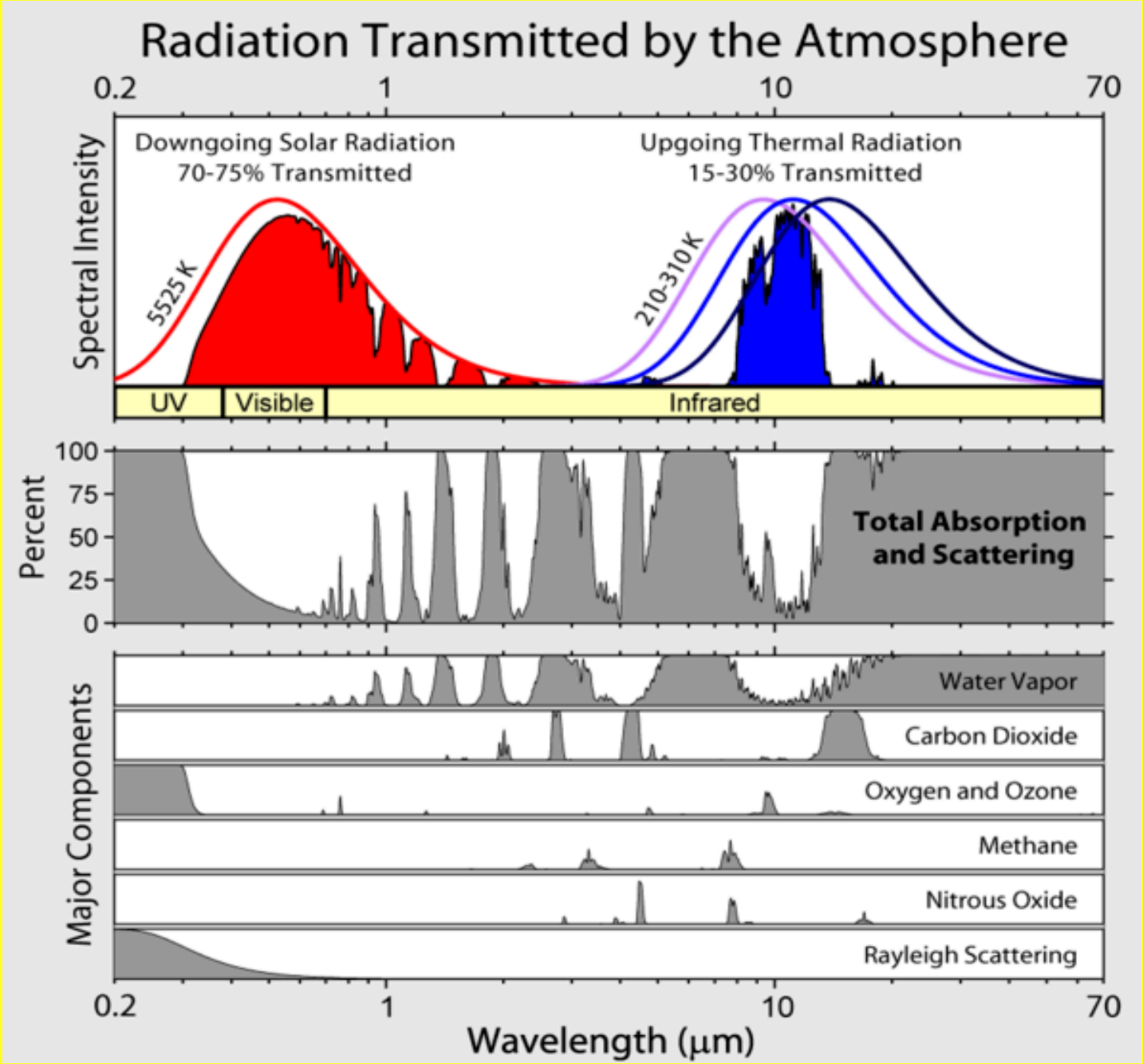

Global Mid-Tropospheric Temperature Change 1979-2025 °C
Average 102 Climate Model Simulations (rcp4.5)
vs. Satellite and Balloon Observations 1979-2014
Average of 102 IPCC
CMIP-5 Climate Models
Observations
Circles - Avg 4 Balloon datasets
Squares- Avg 2 Satellite datasets
The linear trend (based on 1979-2014 only) of all time series intersects at zero at 1979
JR Christy. Univ. Alabama in Huntsville
Model output: KNMI Climate Explorer
°C
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025

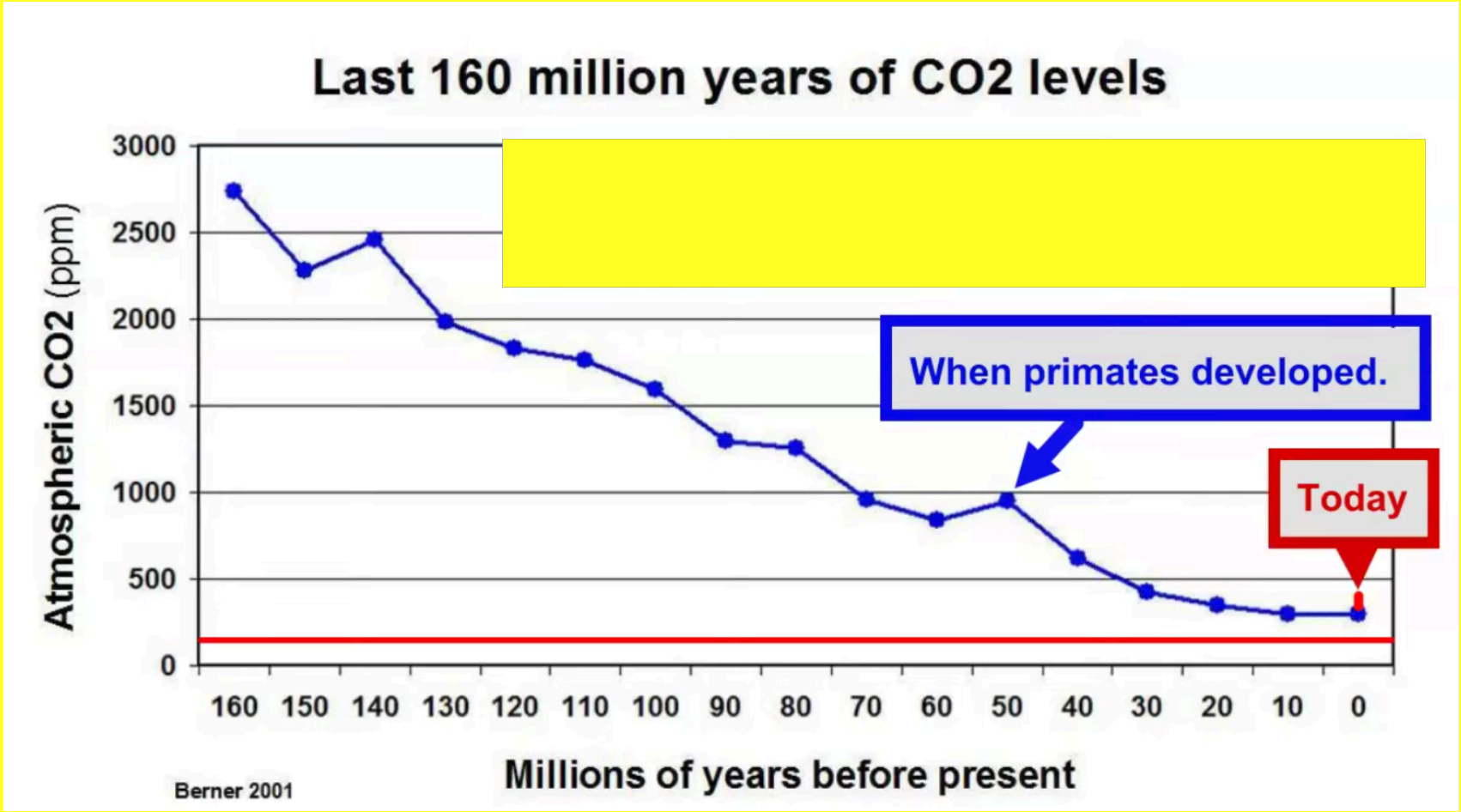

UAH Satellite-Based
Temperature of the
Global Lower Atmosphere
(Version 6.0)
T Departure from '91-'20 Avg. (deg. C)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Running, centered
13-month average
February,
2022:
0.00 deg. C


F
All forcings
10
25
50
100
200
300
500
700
1000
28
24
20
16
12
8
4
Height (km)
75N
45N
30N
15N
Eq
15S
30S
45S
75S
-1
-0.6
-0.2
0.2
0.6
1
-1.2
-0.8
-0.4
0
0.4
0.8
1.2
Total Linear Change Over 1958-1999 (°C)


E
HadAT2 radiosonde data
10
25
50
100
200
300
500
700
1000
28
24
20
16
12
8
4
75N
45N
30N
15N
Eq
15S
30S
45S
75S
-0.5
-0.3
-0.1
0.1
0.3
0.5
-0.6
-0.4
-0.2
0
0.2
0.4
0.6
Linear trend (°C/decade)

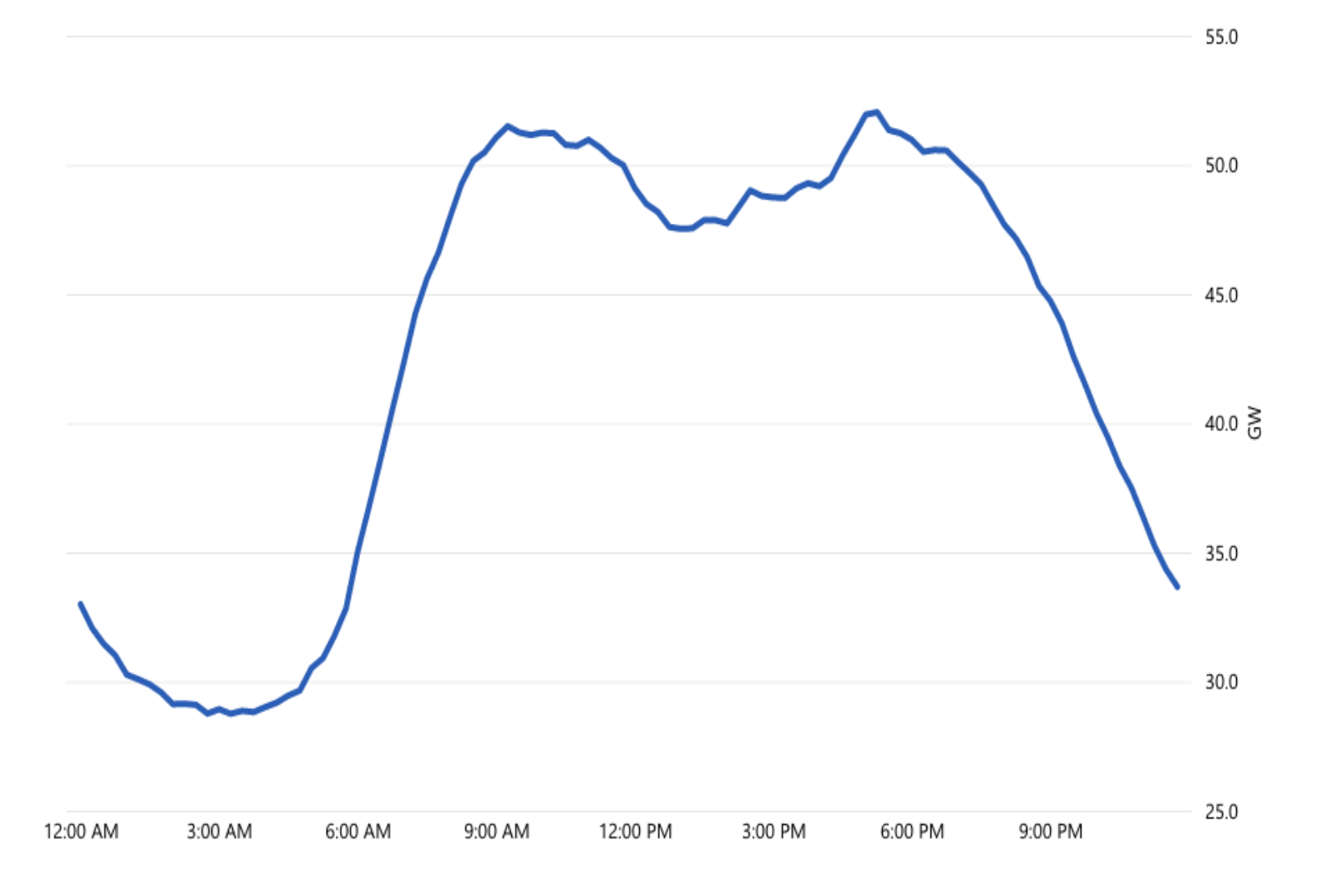

SPETTRO DELLA LUCE SOLARE
E(λ)
0.0
0.5
1.0
1.5
2.0
2.5
lunghezza d'onda λ(μm)

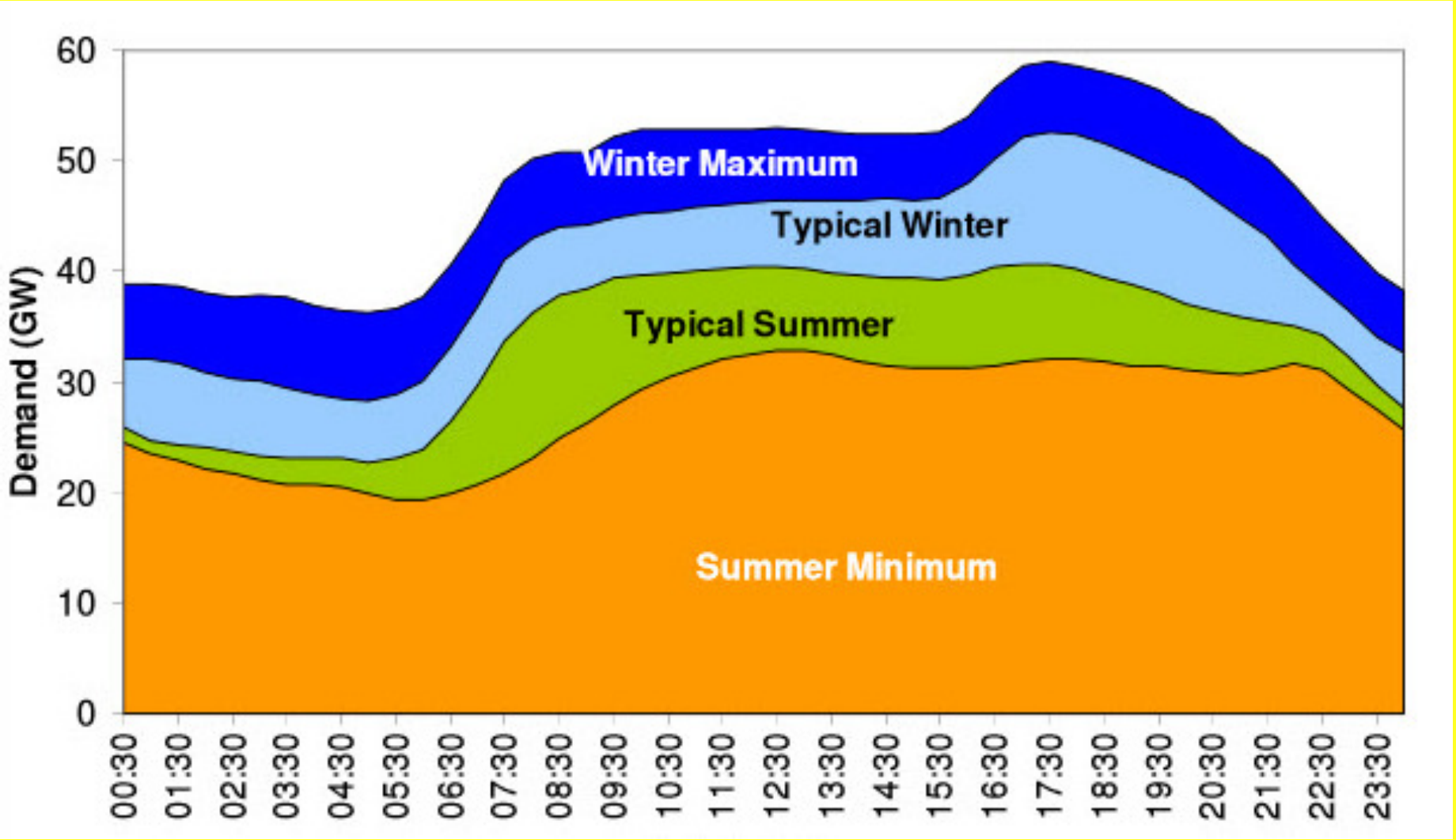

Radiation Transmitted by the Atmosphere
0.2
1
10
70
Spectral Intensity
Downgoing Solar Radiation
70-75% Transmitted
Upgoing Thermal Radiation
15-30% Transmitted
5525 K
210-310 K
UV
Visible
Infrared
Percent
100
75
50
25
0
Total Absorption and Scattering
Major Components
Water Vapor
Carbon Dioxide
Oxygen and Ozone
Methane
Nitrous Oxide
Rayleigh Scattering
0.2
1
10
70
Wavelength (μm)

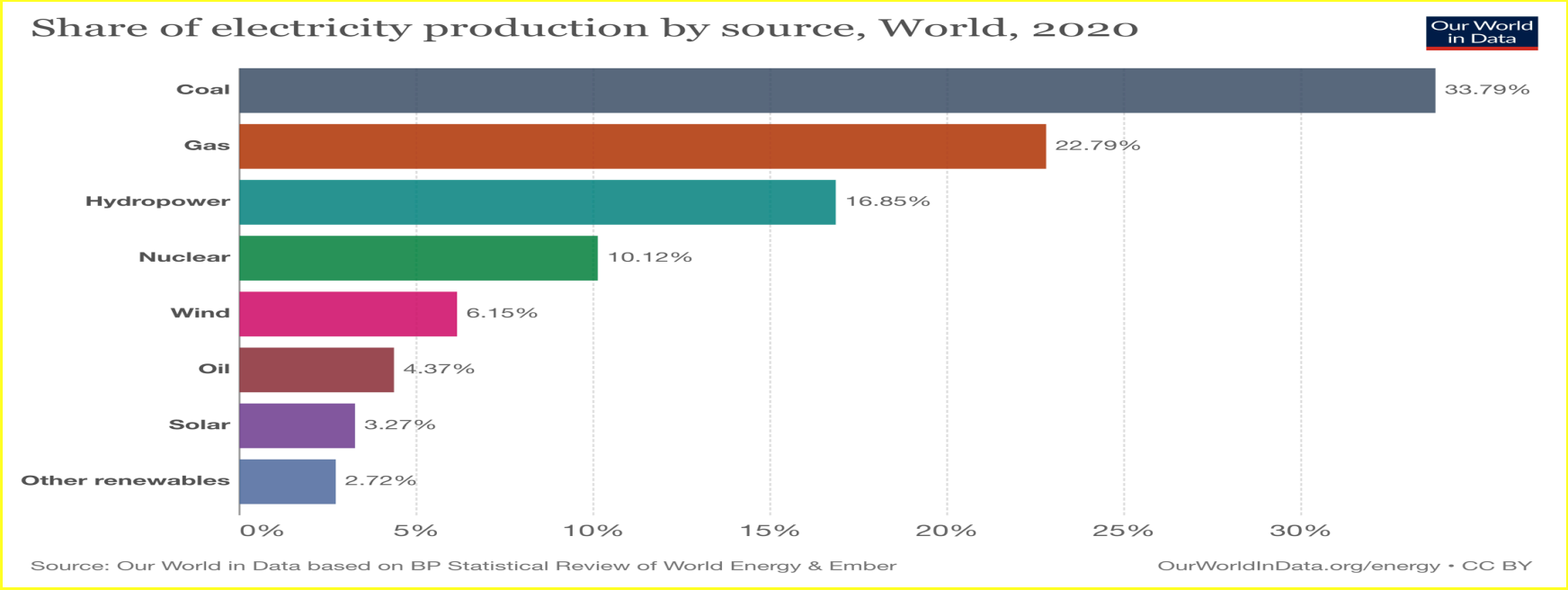

Last 160 million years of CO2 levels
Atmospheric CO2 (ppm)
3000
2500
2000
1500
1000
500
0
When primates developed.
Today
160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
Millions of years before present
Berner 2001

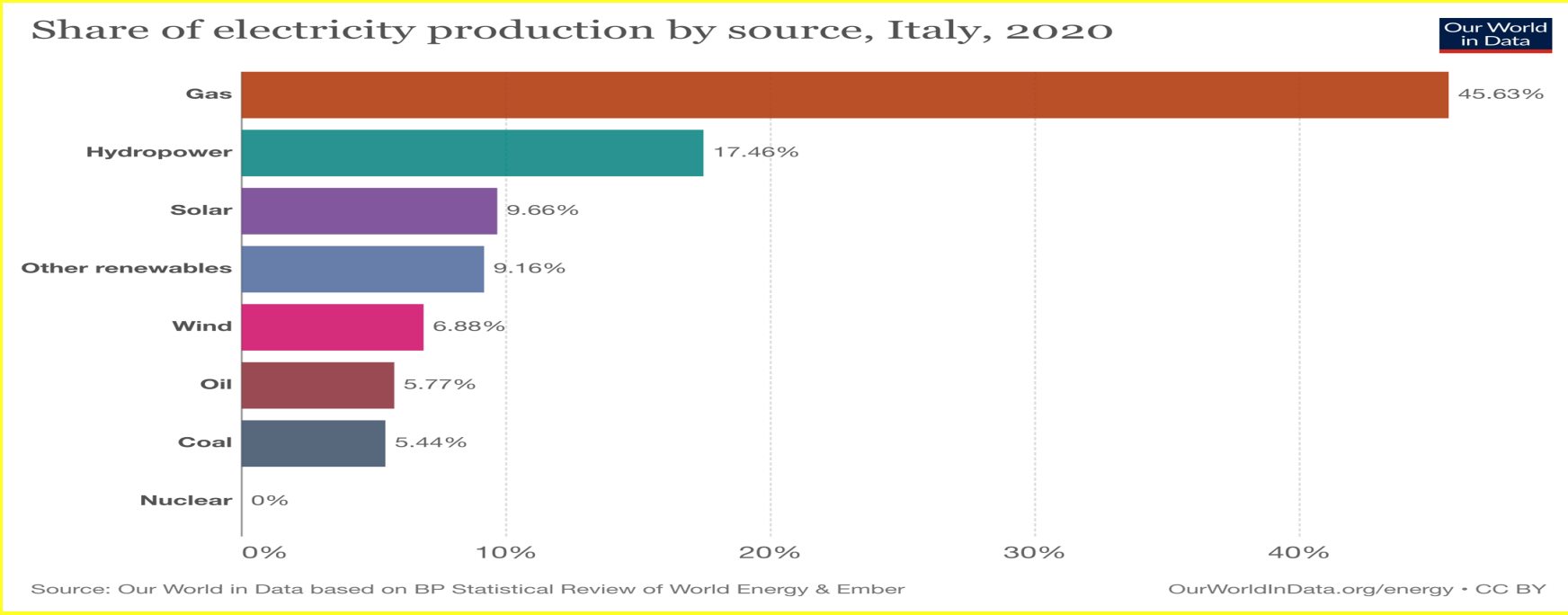
IMPOSSIBLE

ASSORBIMENTO ELETTRICO DELL'ITALIA il 15.12.2022




Demand (GW)
60
50
40
30
20
10
0
Winter Maximum
Typical Winter
Typical Summer
Summer Minimum
00:30
01:30
02:30
03:30
04:30
05:30
06:30
07:30
08:30
09:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
18:30
19:30
20:30
21:30
22:30
23:30


Share of electricity production by source, World, 2020
Our World in Data
Coal
Gas
Hydropower
Nuclear
Wind
Oil
Solar
Other renewables
33.79%
22.79%
16.85%
10.12%
6.15%
4.37%
3.27%
2.72%
0%
5%
10%
15%
20%
25%
30%
Source: Our World in Data based on BP Statistical Review of World Energy & Ember
OurWorldInData.org/energy • CC BY


Share of electricity production by source, Italy, 2020
Our World in Data
Gas
Hydropower
Solar
Other renewables
Wind
Oil
Coal
Nuclear
45.63%
17.46%
9.66%
9.16%
6.88%
5.77%
5.44%
0%
0%
10%
20%
30%
40%
Source: Our World in Data based on BP Statistical Review of World Energy & Ember
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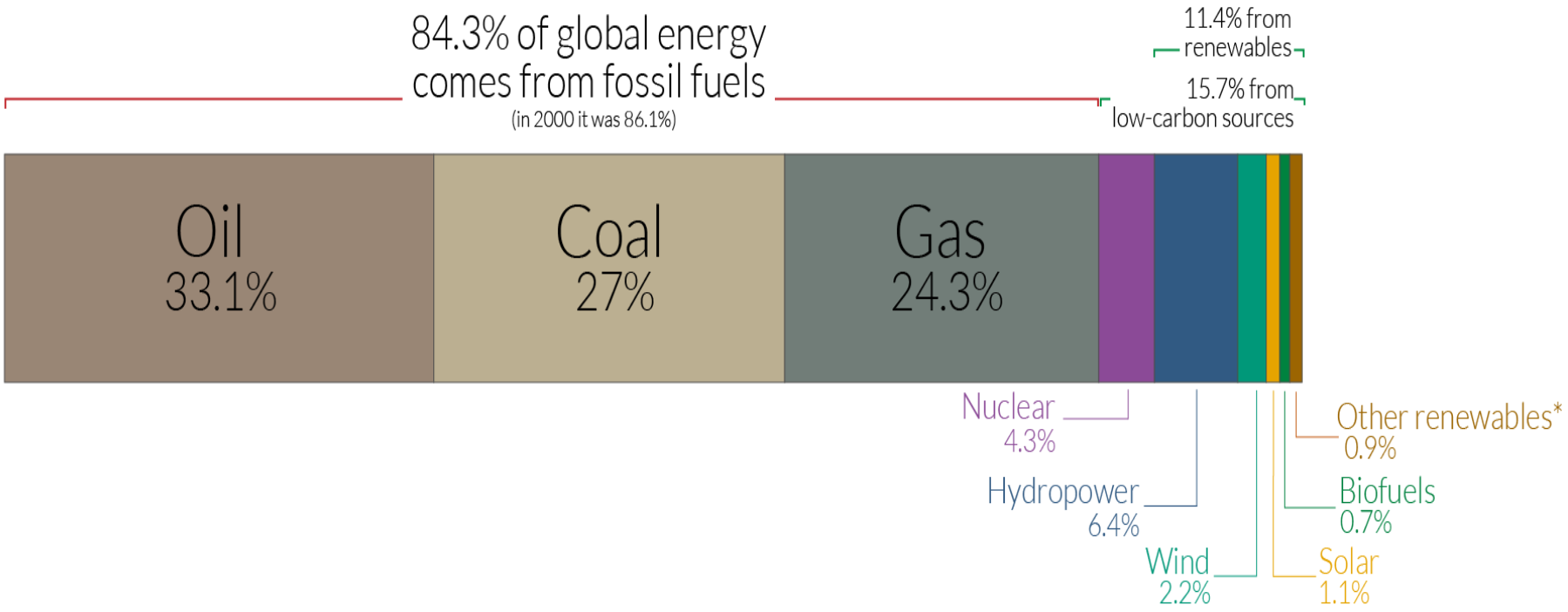
Global primary energy consumption by source

Our World in Data

The breakdown of primary energy is shown based on the 'substitution' method which takes account of inefficiencies in energy production from fossil fuels. This is based on global energy for 2019.



*'Other renewables' includes geothermal, biomass, wave and tidal. It does not include traditional biomass which can be a key energy source in lower income settings.

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Source: Our World in Data based on BP Statistical Review of World Energy (2020).

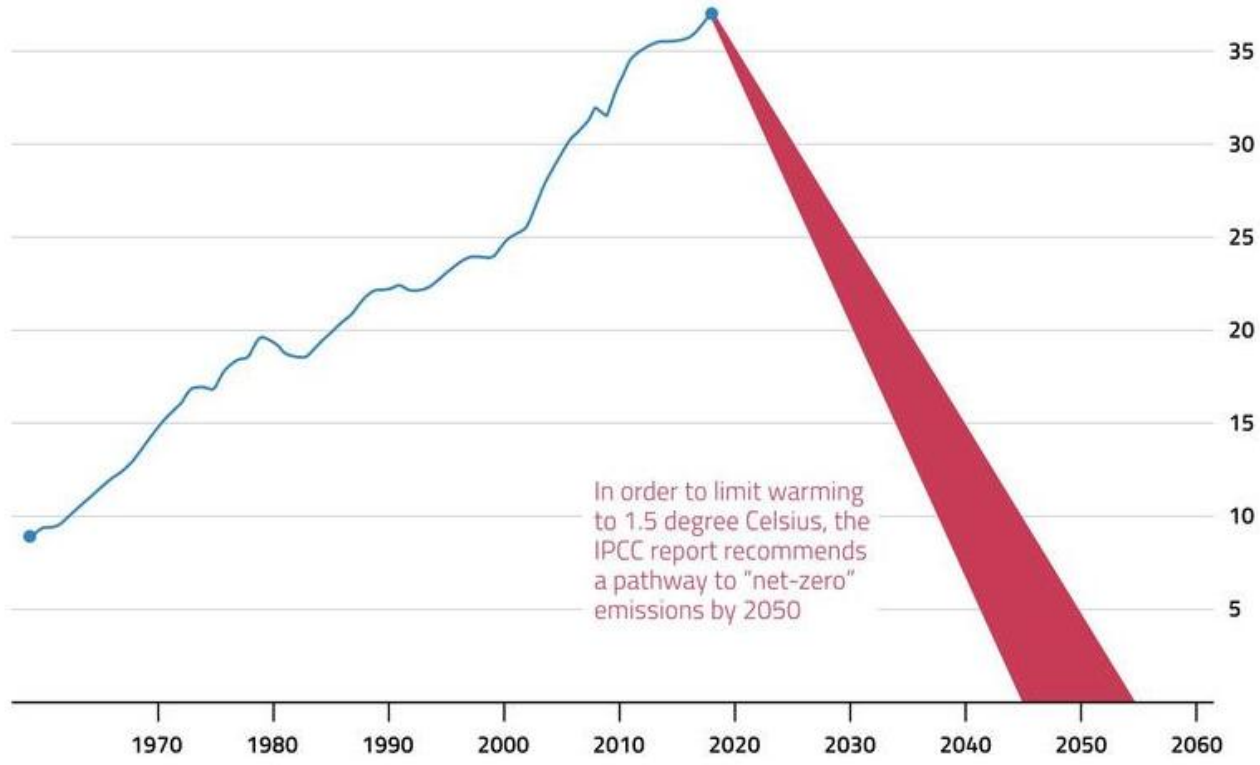
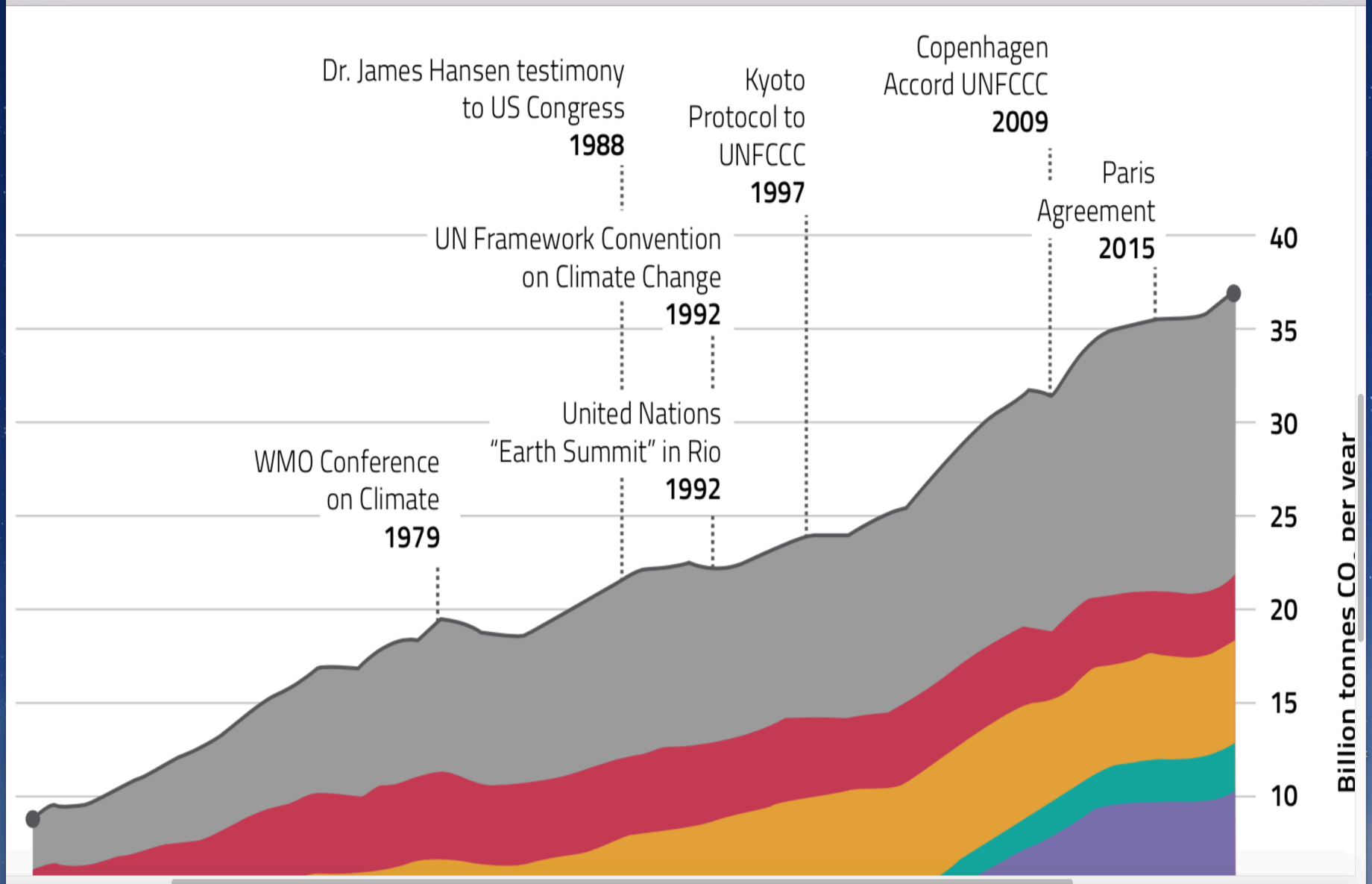


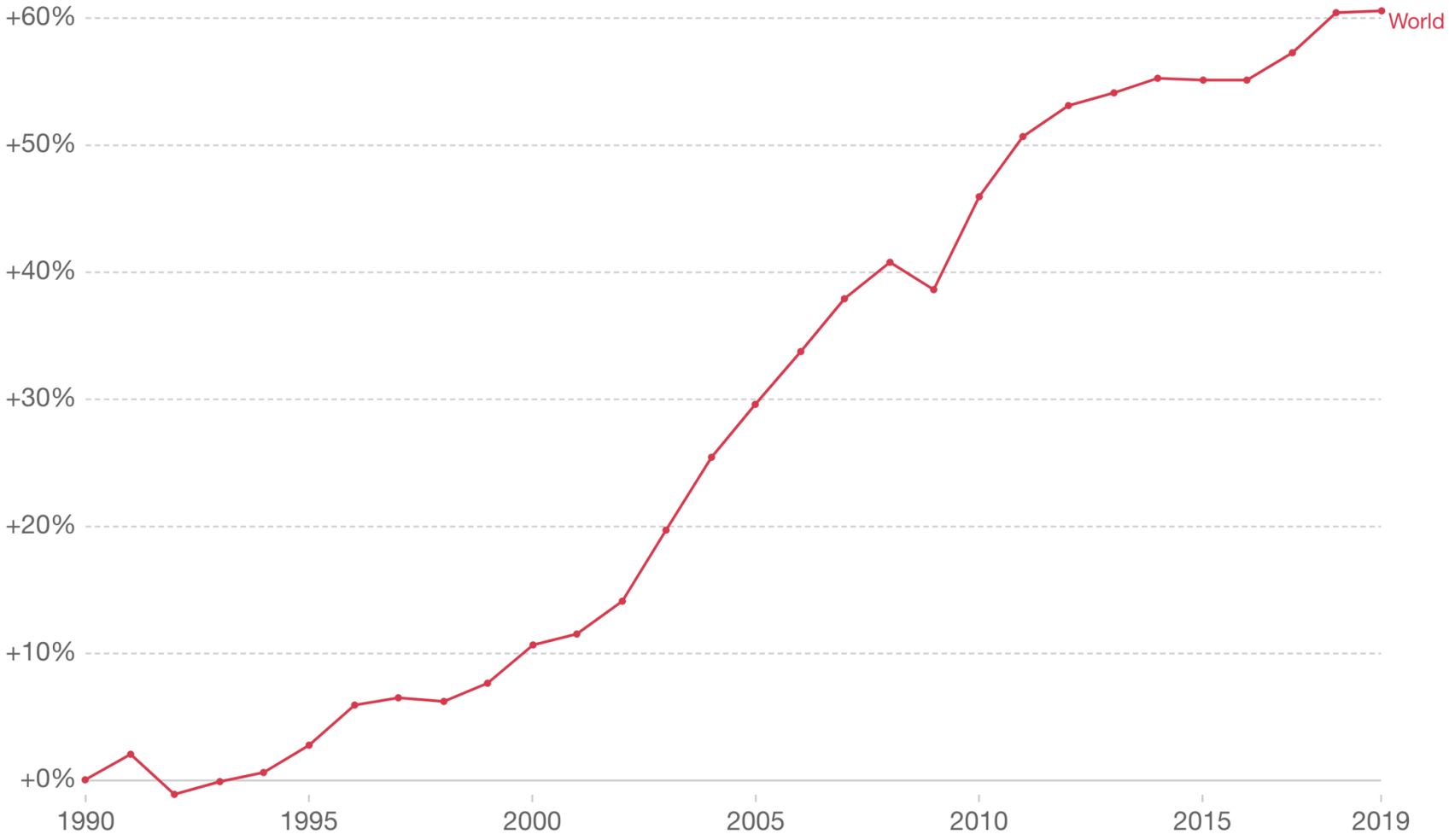
Figure 1.14. IPCC carbon emission pathway to limit warming to 1.5 degrees


Dr. James Hansen testimony to US Congress 1988
Kyoto Protocol to UNFCCC 1997
Copenhagen Accord UNFCCC 2009
Paris Agreement 2015
UN Framework Convention on Climate Change 1992
United Nations "Earth Summit" in Rio 1992
WMO Conference on Climate 1979
40
35
30
25
20
15
10
Billion tonnes CO2 per year

Annual CO_2 emissions

Carbon dioxide (CO_2) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World in Data



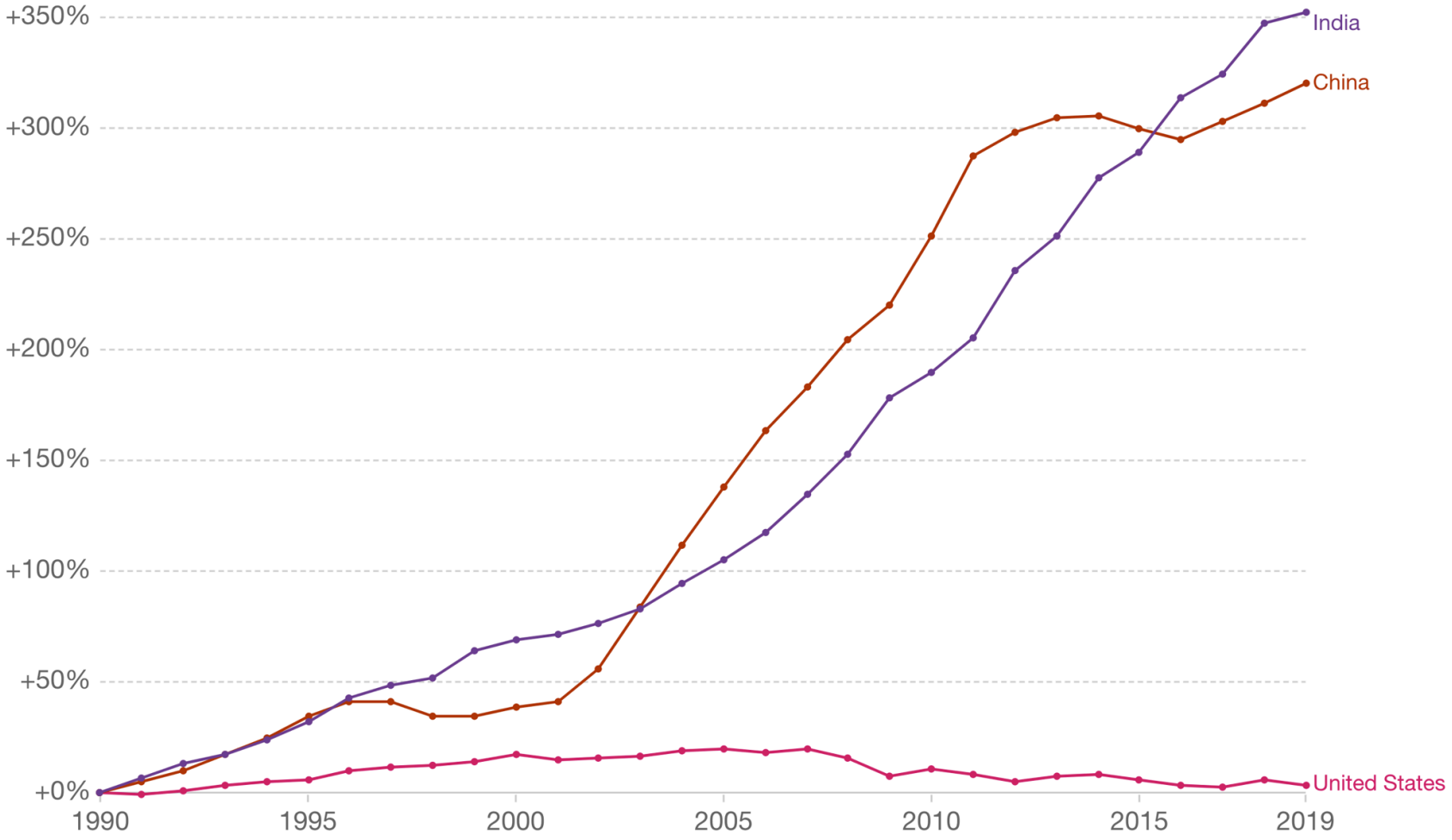
Source: Global Carbon Project; Carbon Dioxide Information Analysis Centre (CDIAC)

Note: CO_2 emissions are measured on a production basis, meaning they do not correct for emissions embedded in traded goods.

Annual CO_2 emissions

Carbon dioxide (CO_2) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World in Data



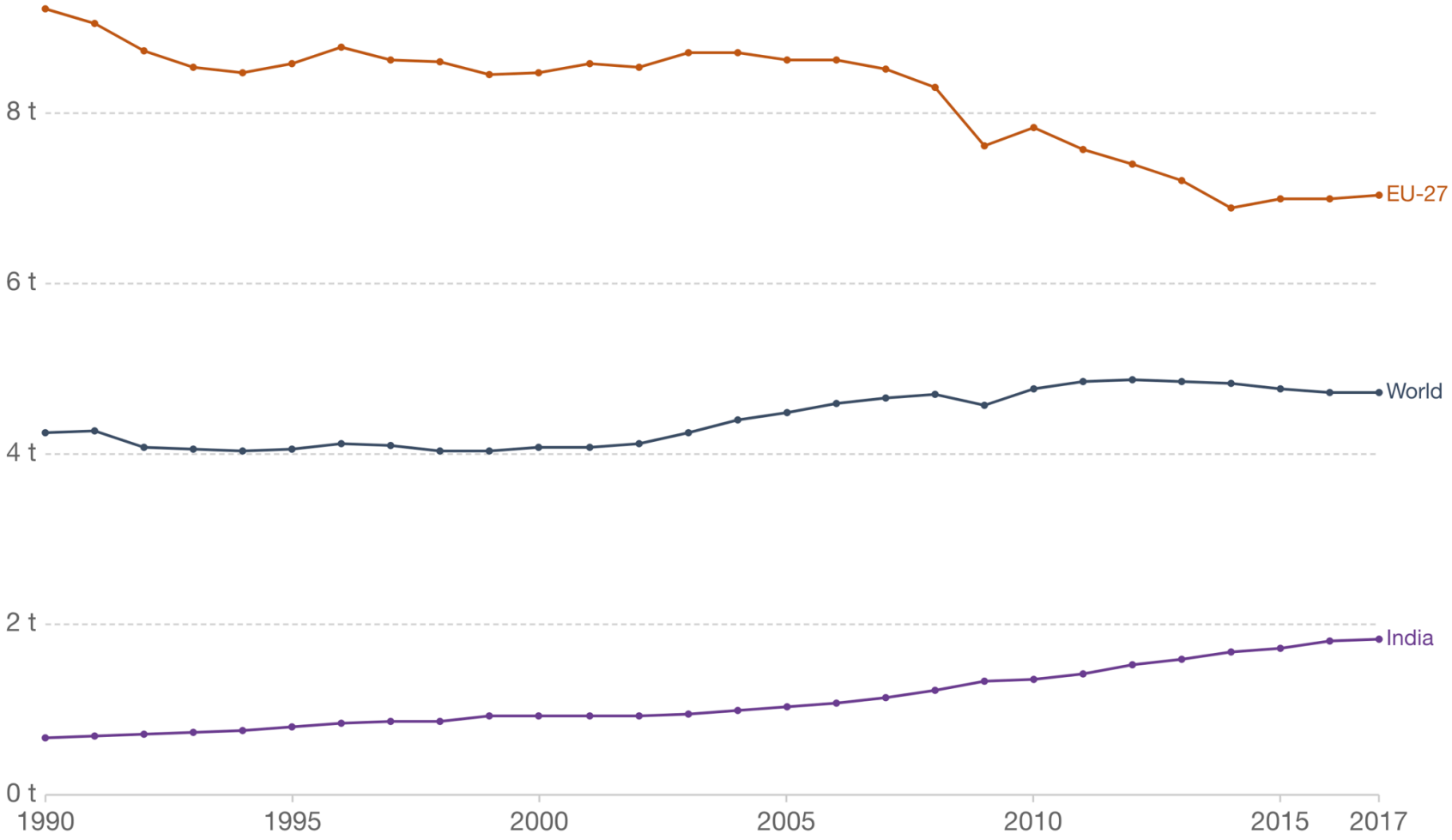
Source: Global Carbon Project; Carbon Dioxide Information Analysis Centre (CDIAC)

Note: CO_2 emissions are measured on a production basis, meaning they do not correct for emissions embedded in traded goods.

Per capita CO_2 emissions

Carbon dioxide (CO_2) emissions from the burning of fossil fuels for energy and cement production. Land use change is not included.

Our World in Data



Source: Our World in Data based on the Global Carbon Project; Gapminder & UN

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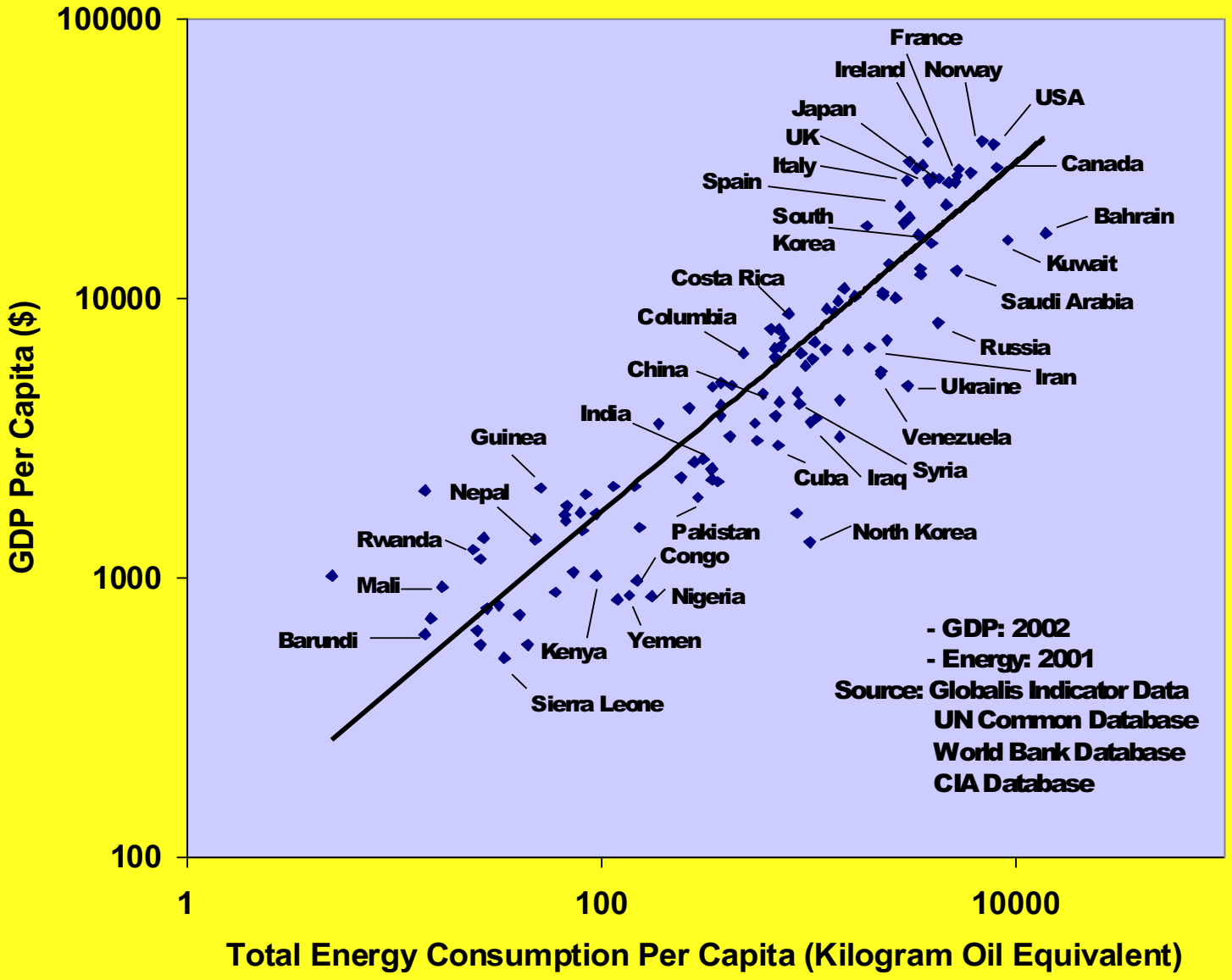
Note: CO_2 emissions are measured on a production basis, meaning they do not correct for emissions embedded in traded goods.

UNDESIRABLE


100000
10000
1000
100
GDP Per Capita ($)
1
100
10000
Total Energy Consumption Per Capita (Kilogram Oil Equivalent)
France
Ireland
Norway
USA
Japan
UK
Italy
Canada
Spain
South Korea
Bahrain
Kuwait
Costa Rica
Saudi Arabia
Columbia
Russia
China
Iran
Ukraine
India
Venezuela
Guinea
Syria
Cuba
Iraq
Nepal
Pakistan
North Korea
Rwanda
Congo
Mali
Nigeria
Barundi
Yemen
Kenya
Sierra Leone
- GDP: 2002
- Energy: 2001
Source: Globalis Indicator Data
UN Common Database
World Bank Database
CIA Database