Global Warming Data 2023

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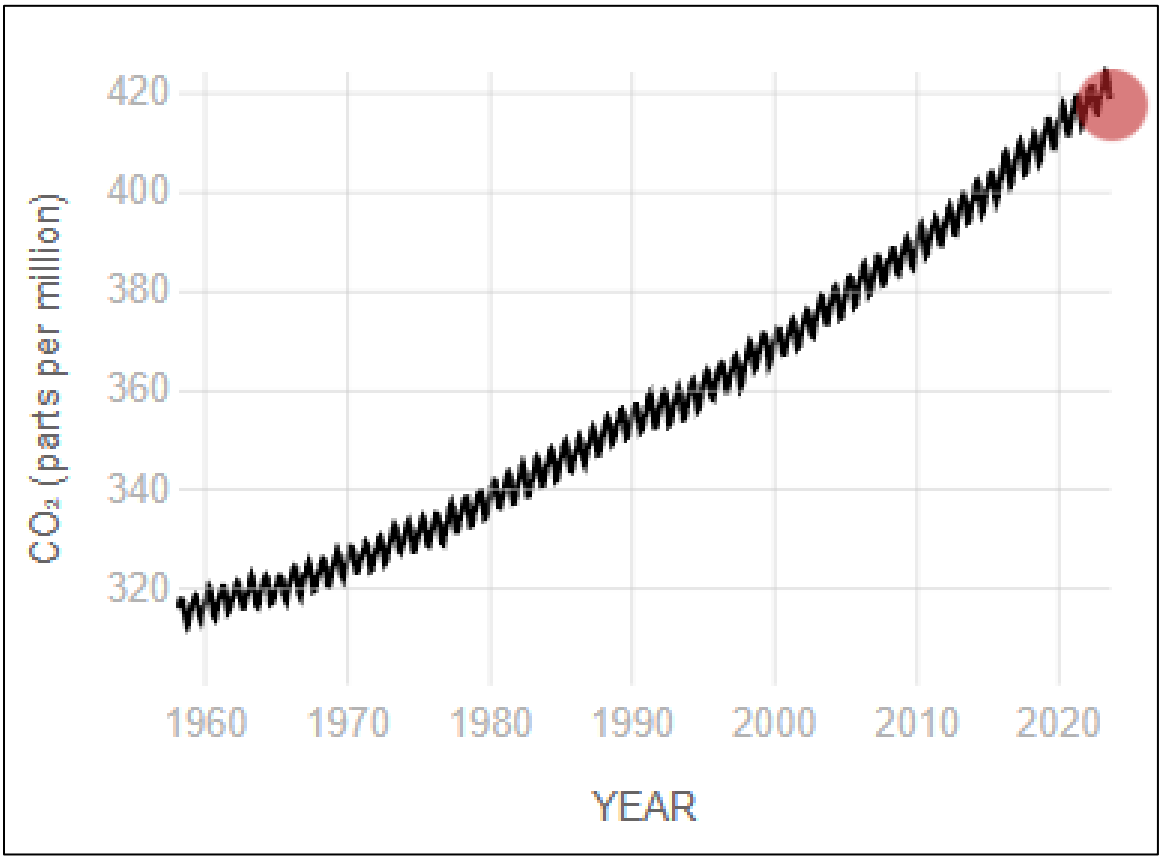
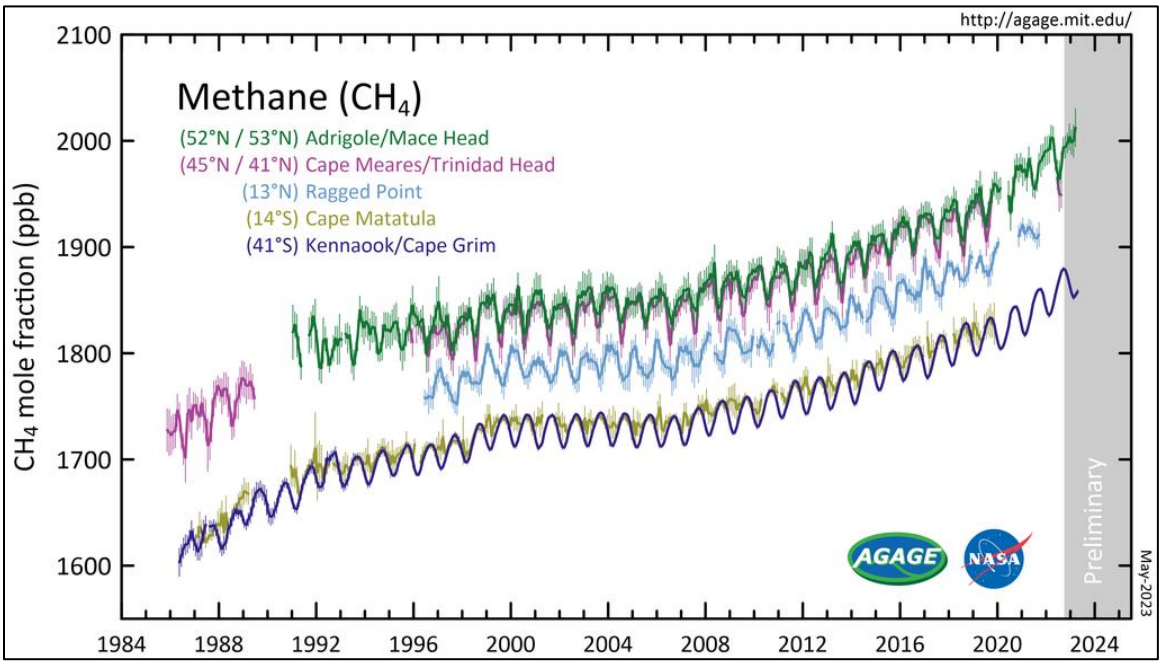
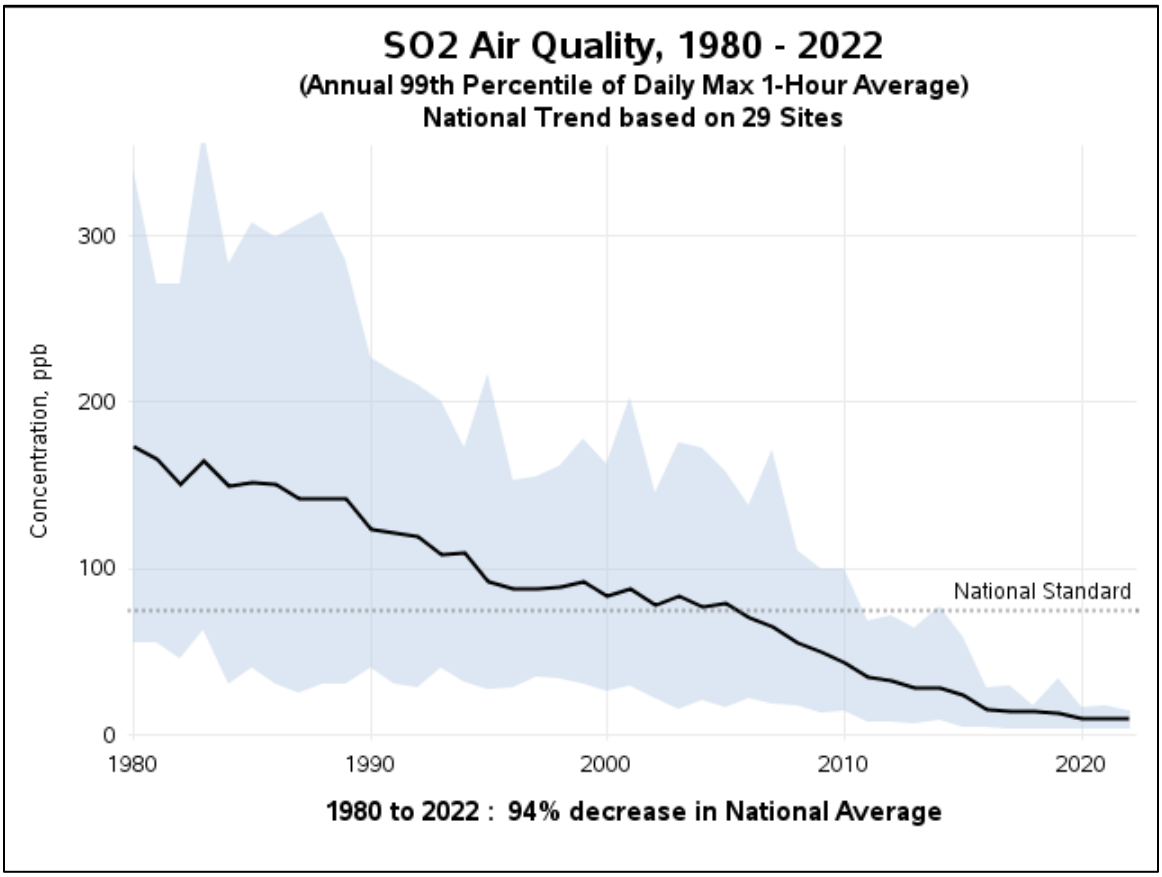
Hold down CTRL and Click on a graph to see its Internet link.

Drivers of Global Warming

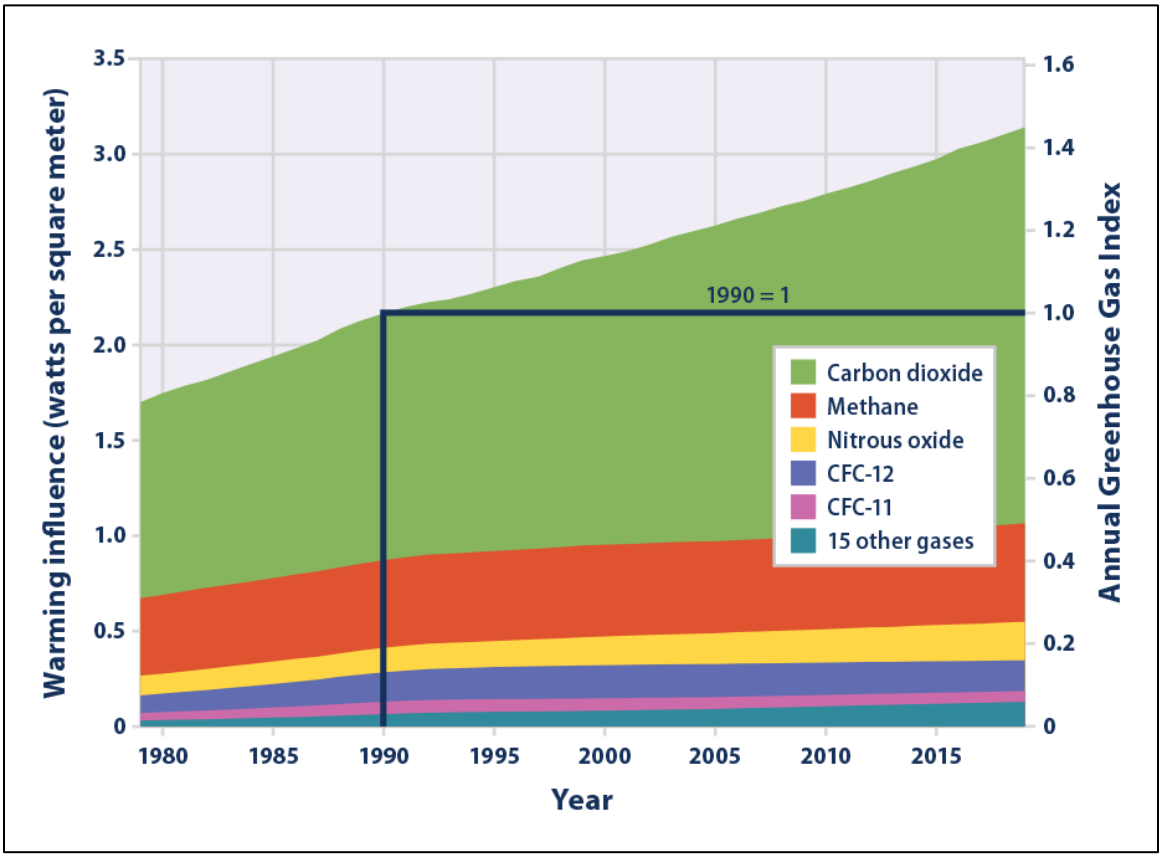


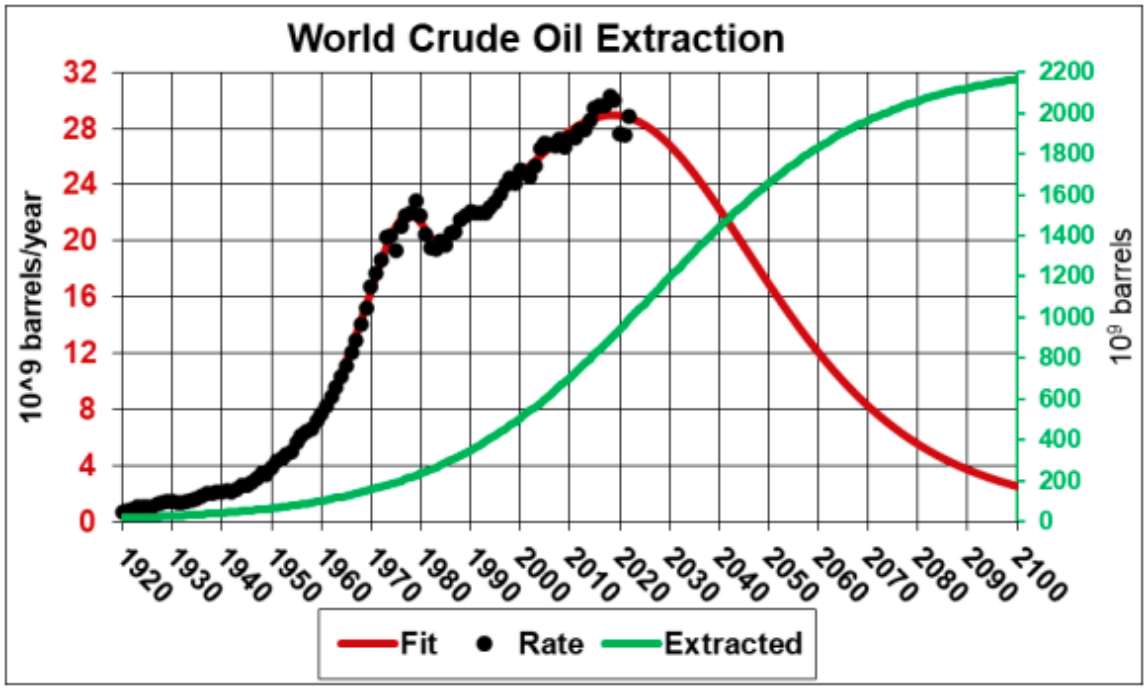
The linear fit from 1980-2022 yields 1.60-ppmCO_2/year.

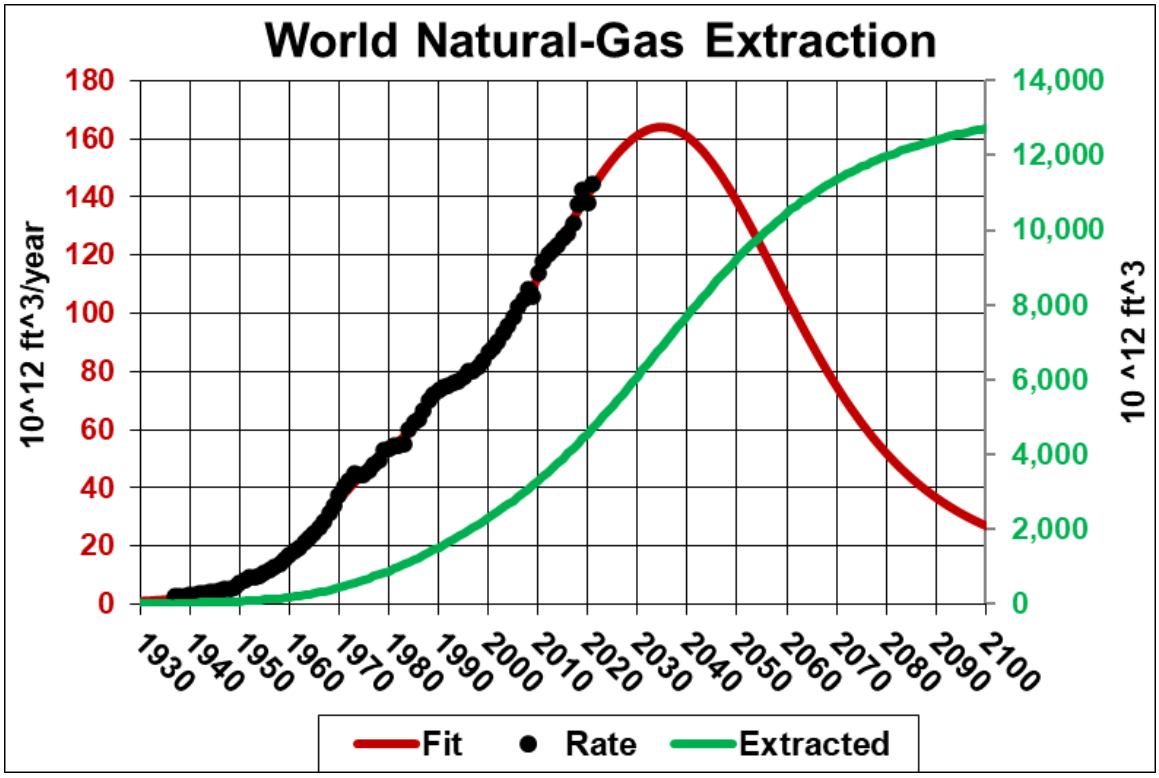


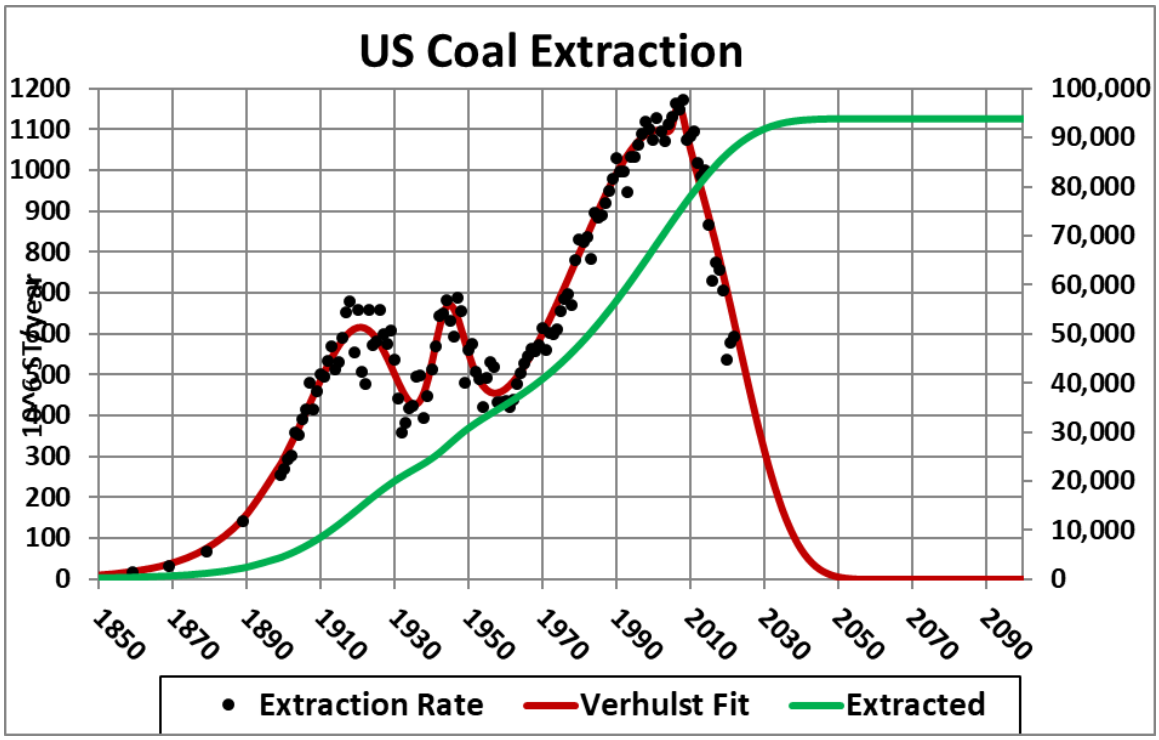


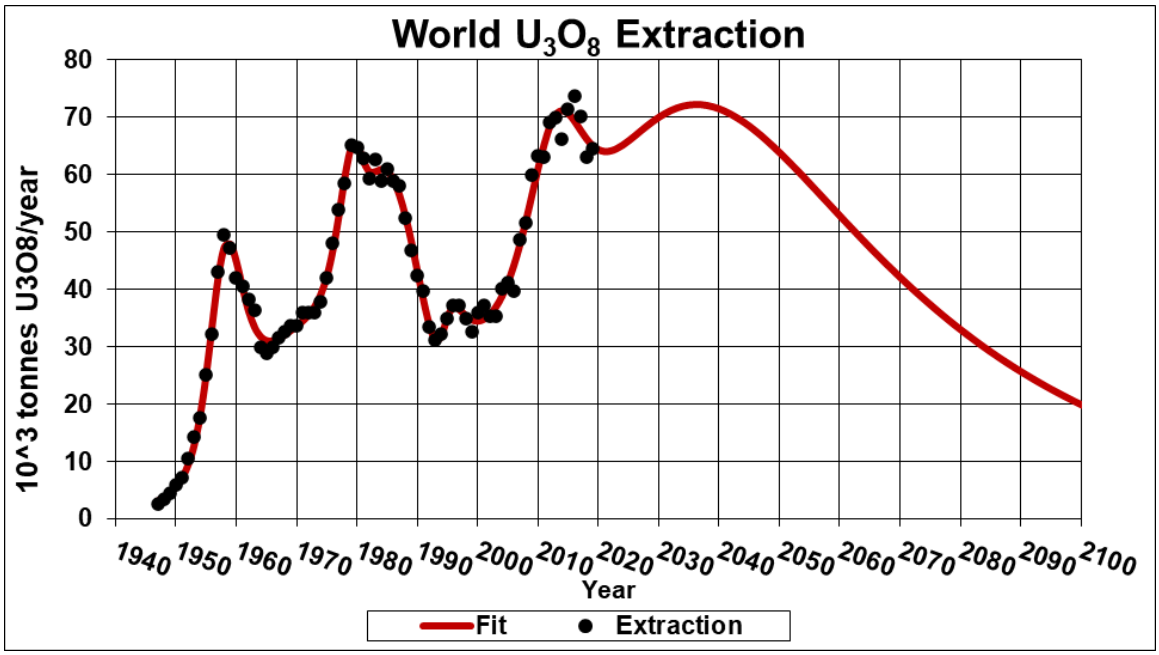
U.S. SO_2 trend; this contributes to **global cooling** and **air pollution**.

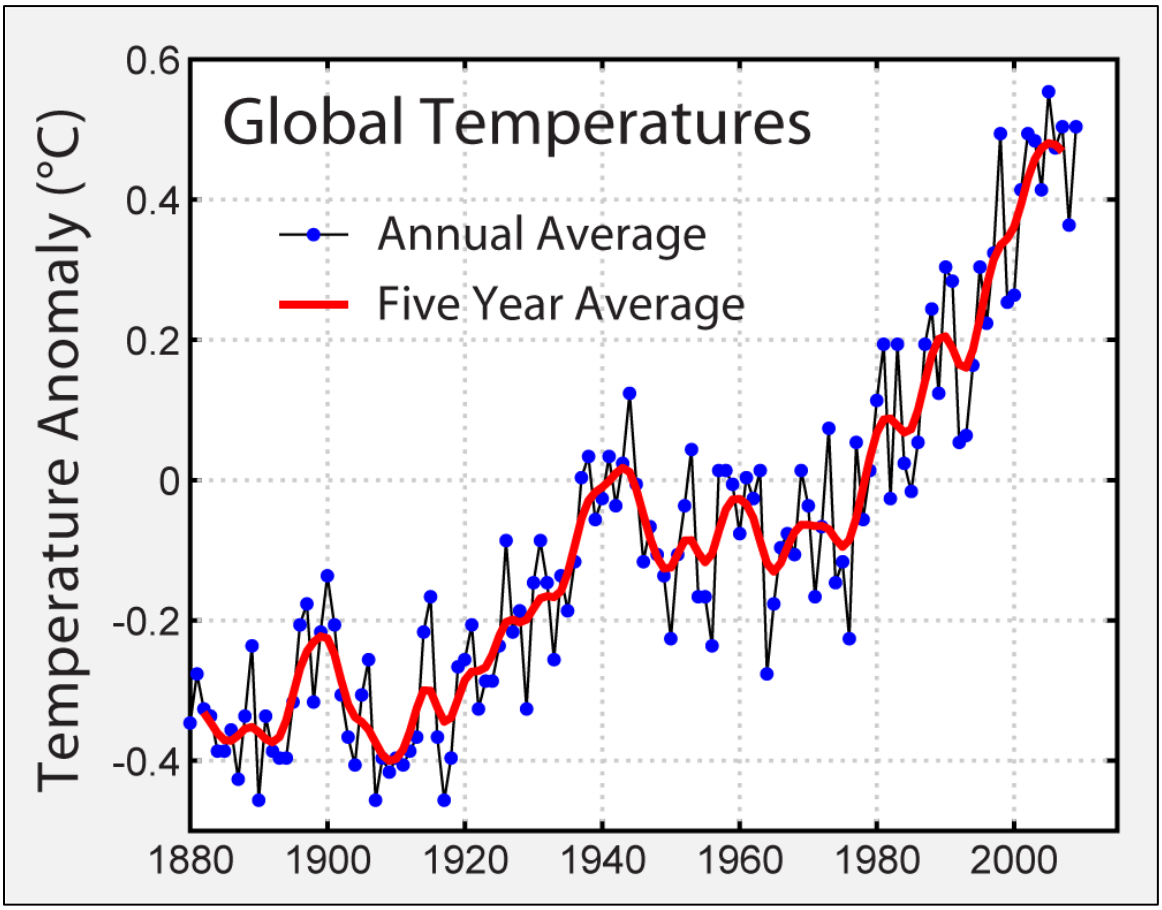



World Crude Oil Extraction
10^9 barrels/year
10^9 barrels
0
4
8
12
16
20
24
28
32
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Fit
Rate
Extracted

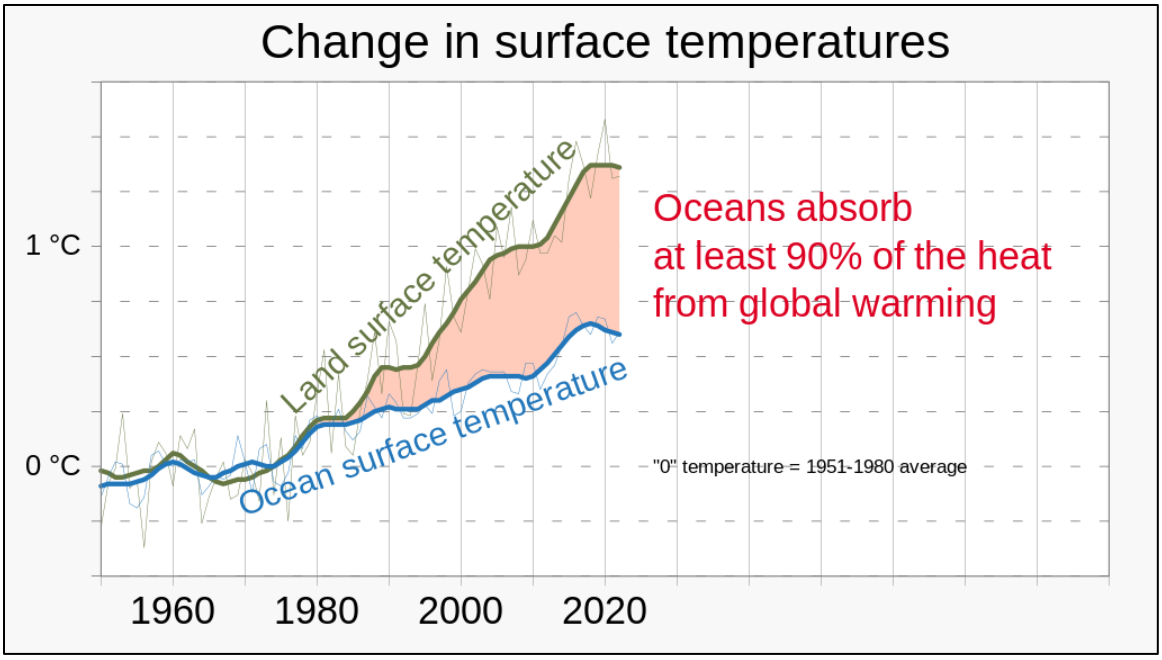

World Natural-Gas Extraction
10^12 ft^3/year
10 ^12 ft^3
0
20
40
60
80
100
120
140
160
180
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Fit
Rate
Extracted

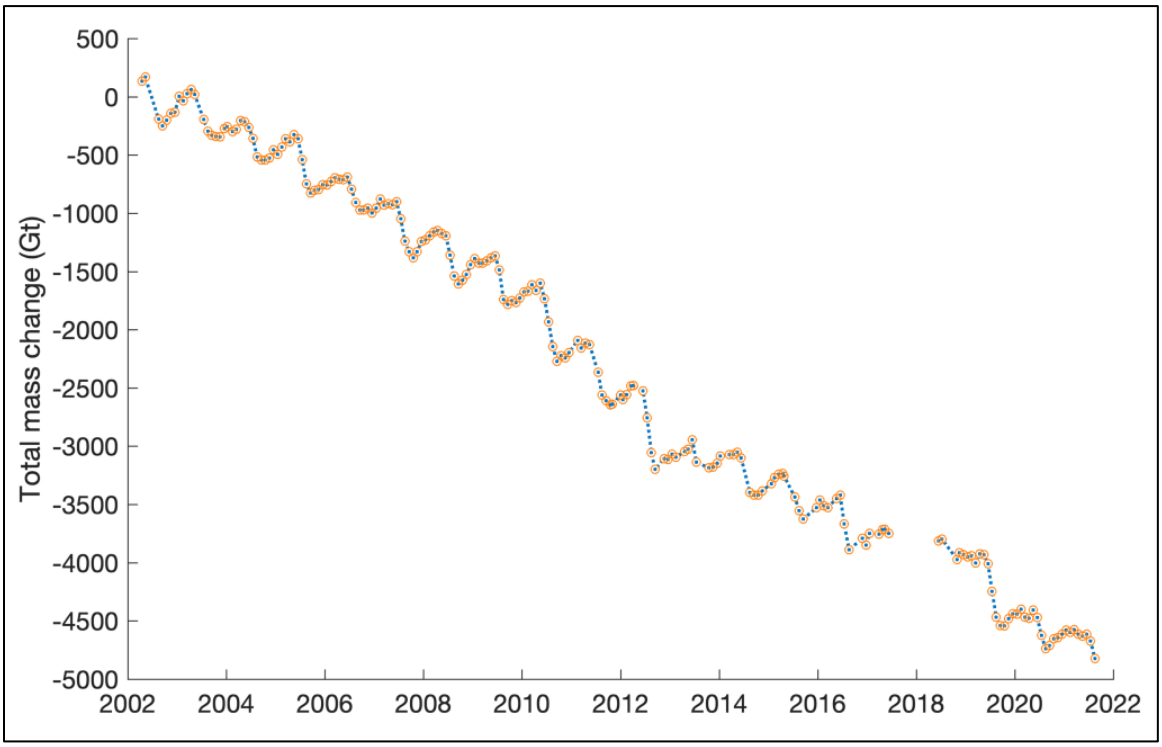

US Coal Extraction
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
10^6 Ton/year
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
1850
1870
1890
1910
1930
1950
1970
1990
2010
2030
2050
2070
2090
Extraction Rate
Verhulst Fit
Extracted


World U3O8 Extraction
80
70
60
50
40
30
20
10
0
10^3 tonnes U3O8/year
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Year
Fit
Extraction

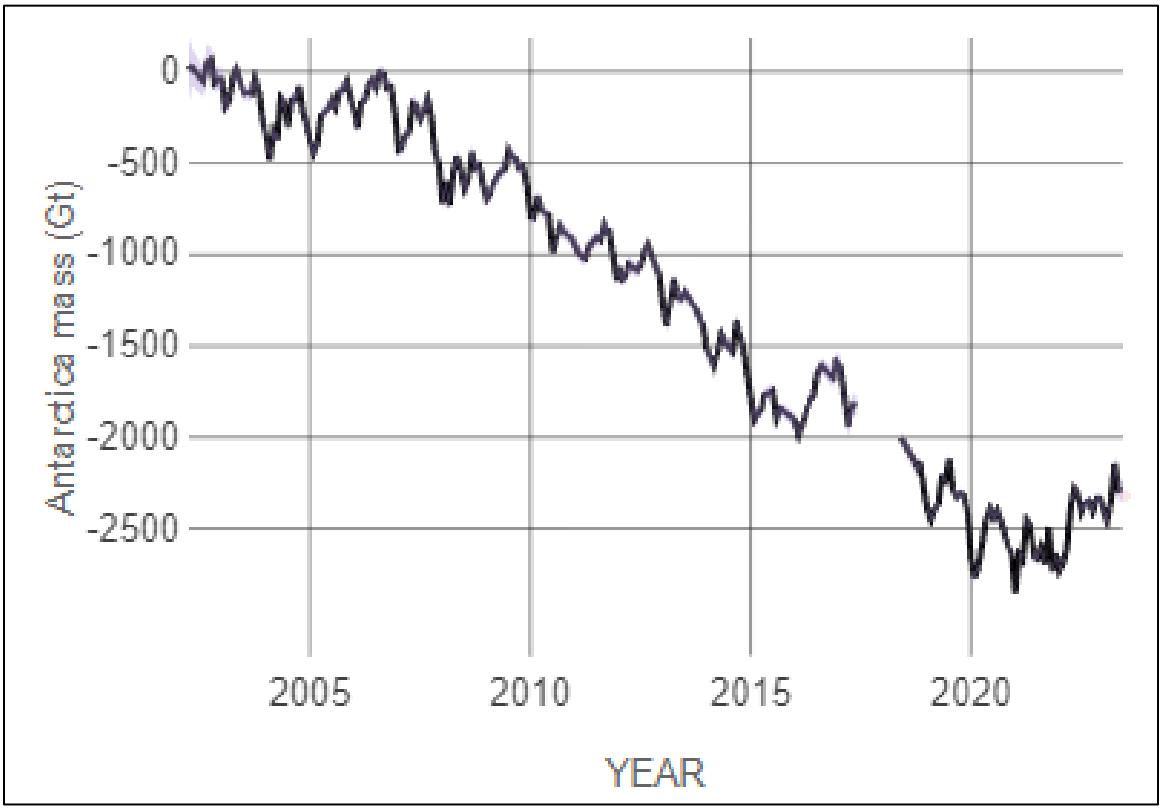


1980 is essentially the start of super global warming. Perhaps 1980 is the trigger date often mentioned. A linear fit to the 1980-2022 data yields 0.0183 °C/year; 0.0114 °C/ppm-CO_2.



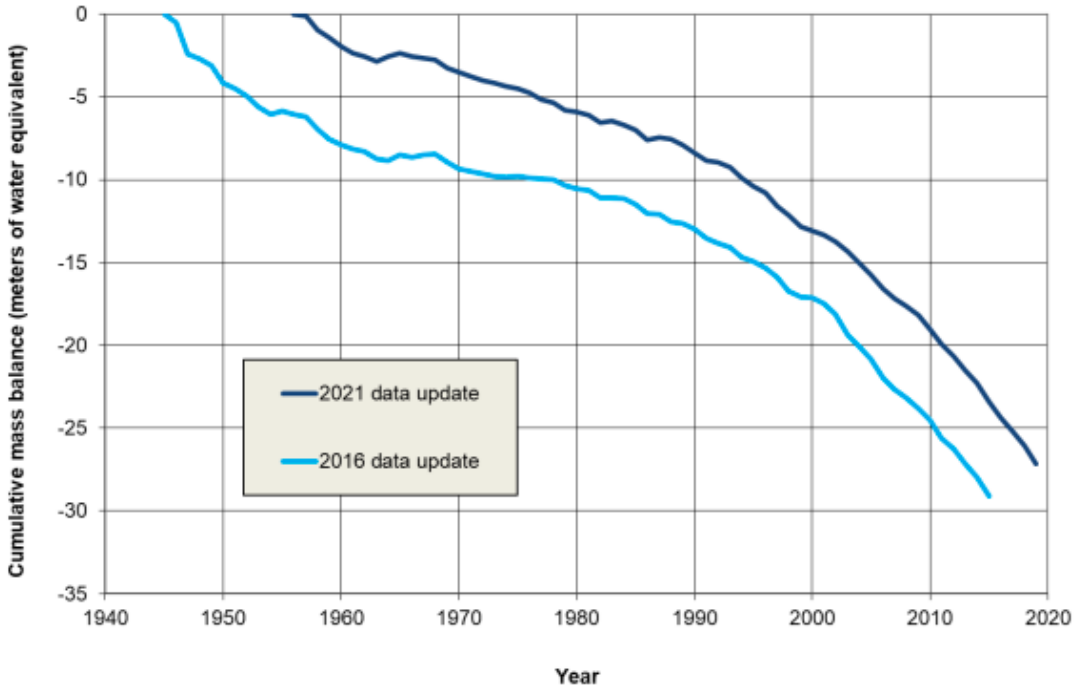


Total mass change (gigaton) of the Greenland ice sheet; contributes to global sea level.

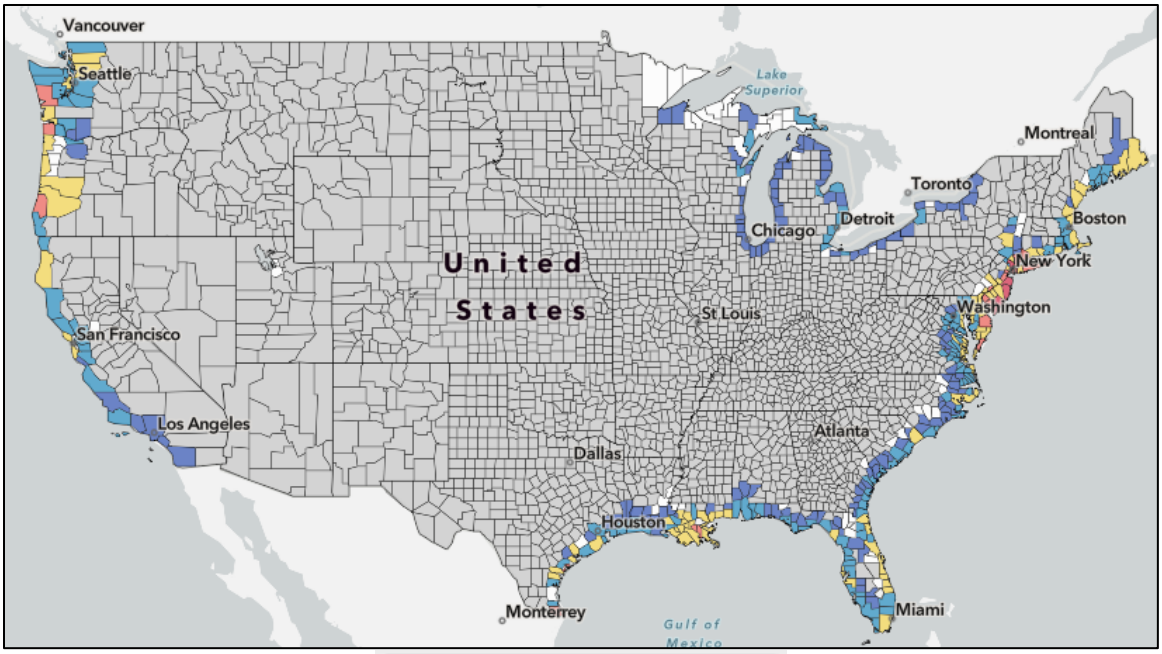


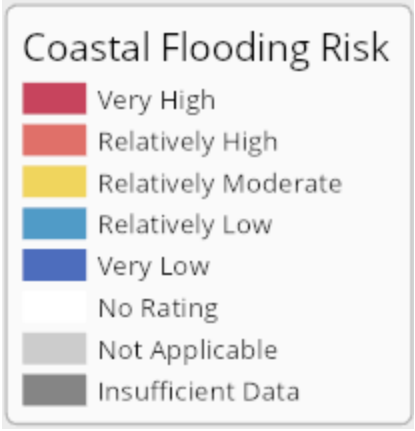
Total mass change (gigaton) of Antarctica ice sheet; contributes to global sea level.

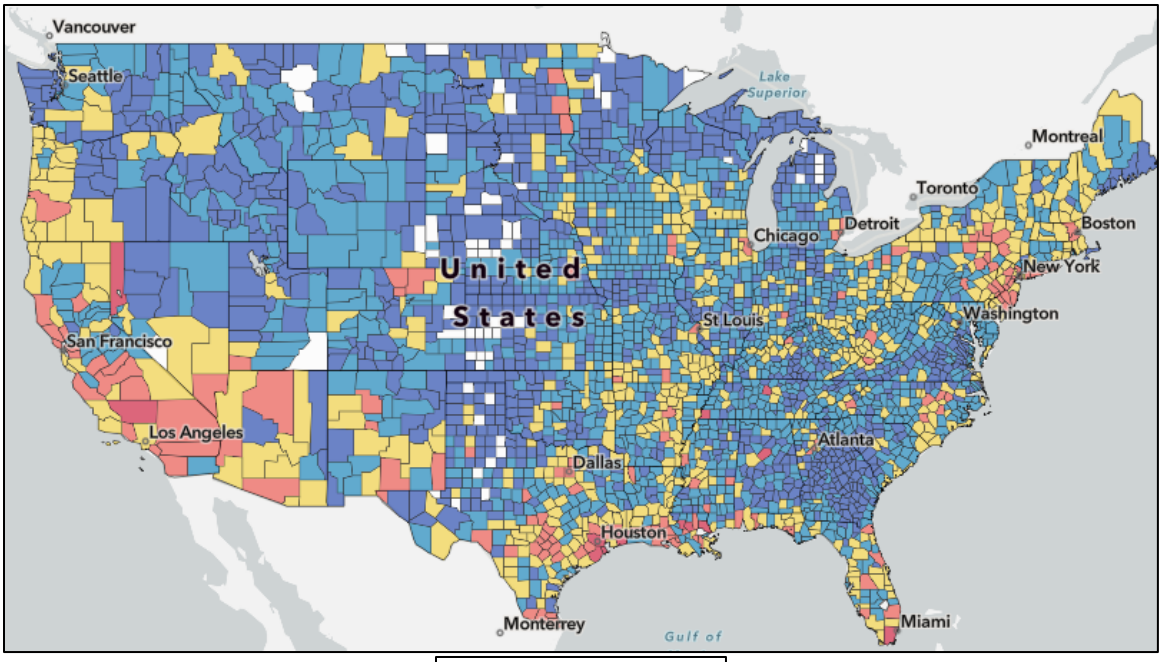
Figure TD-1. The Effect of Adjusting the Starting Point and Averaging Method for Mass Balance of Reference Glaciers Worldwide

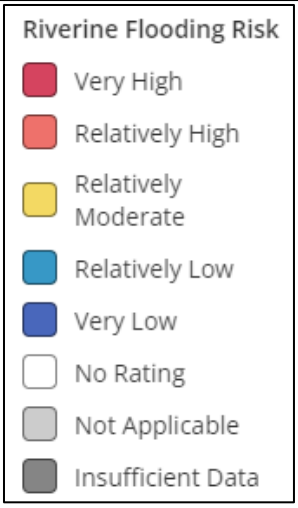


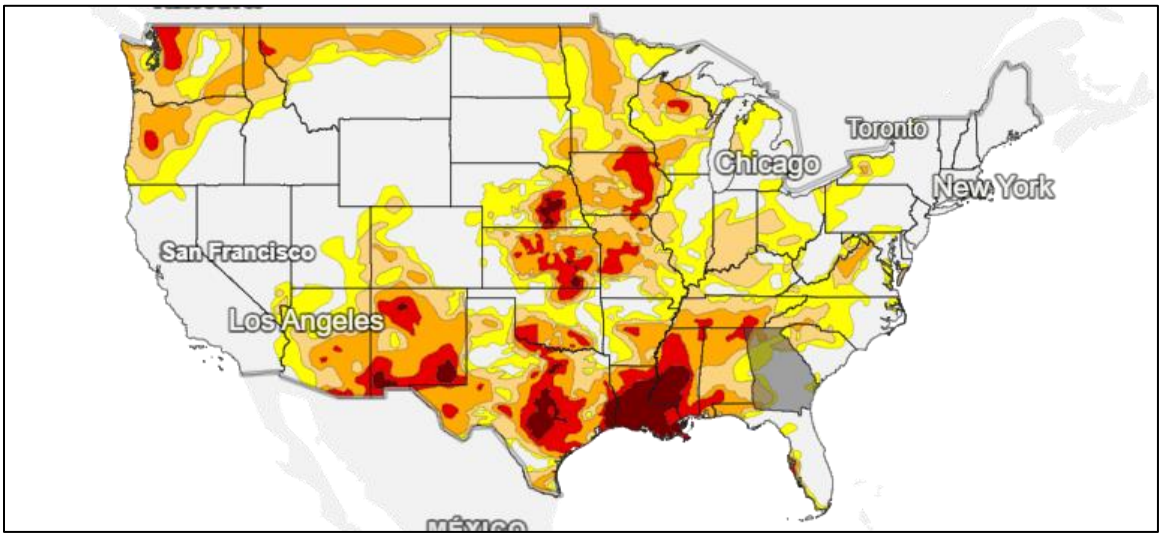
Contributes to global sea level.


Vancouver
Seattle
Lake Superior
Montreal
Toronto
Detroit
Chicago
Boston
New York
United States
Washington
St Louis
San Francisco
Los Angeles
Atlanta
Dallas
Houston
Monterrey
Gulf of Mexico
Miami


Coastal Flooding Risk
Very High
Relatively High
Relatively Moderate
Relatively Low
Very Low
No Rating
Not Applicable
Insufficient Data

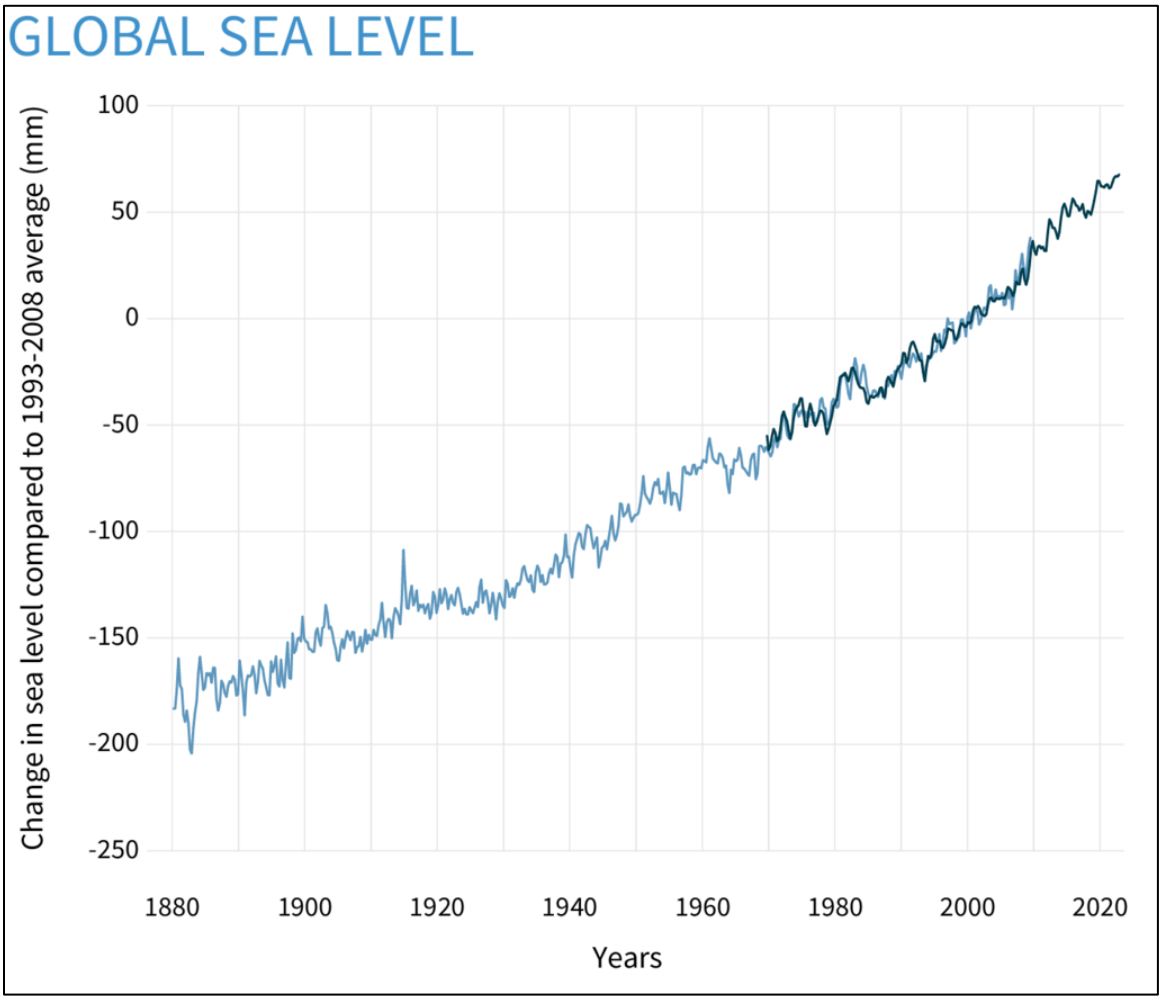




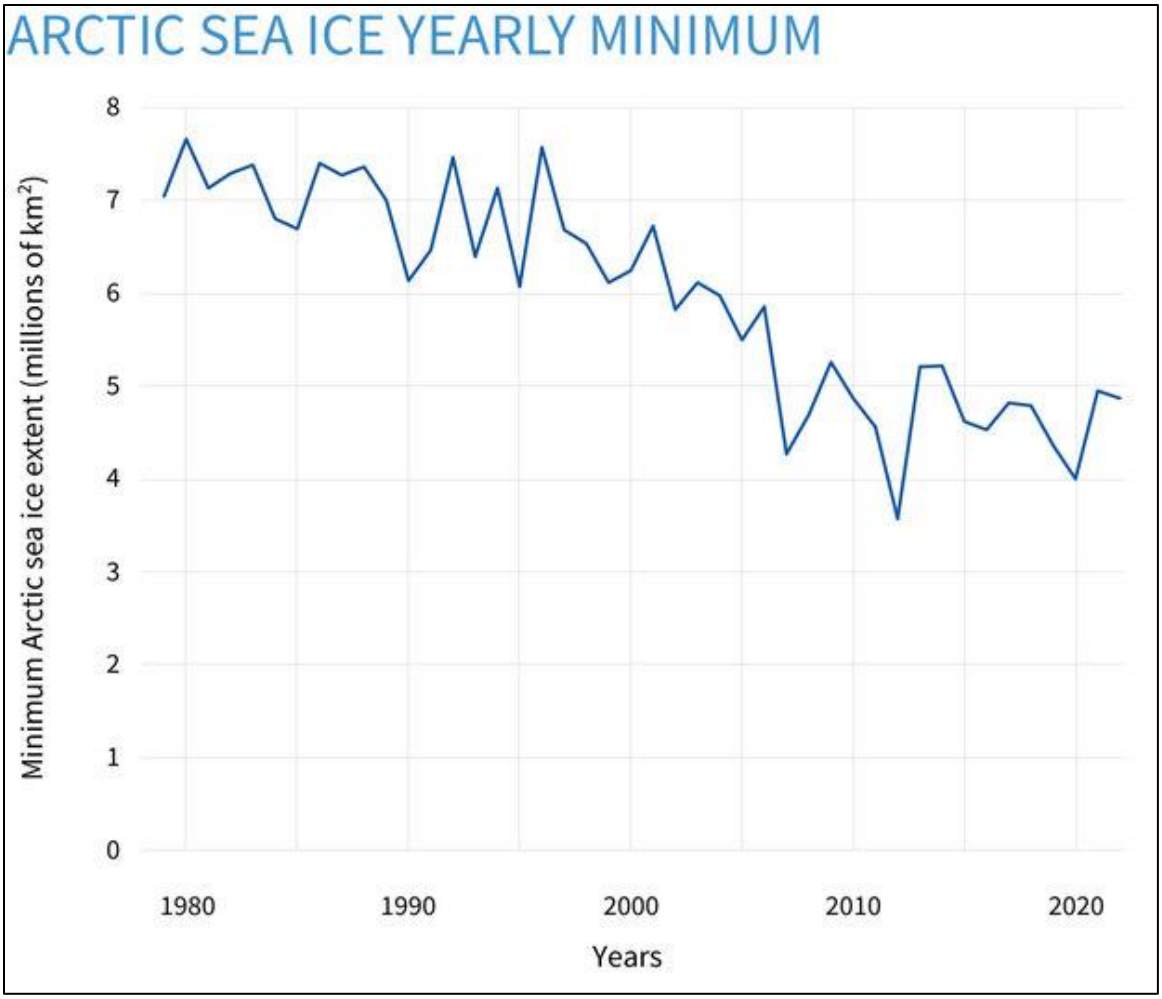


U.S. Drought Monitor 2000-Oct 2023

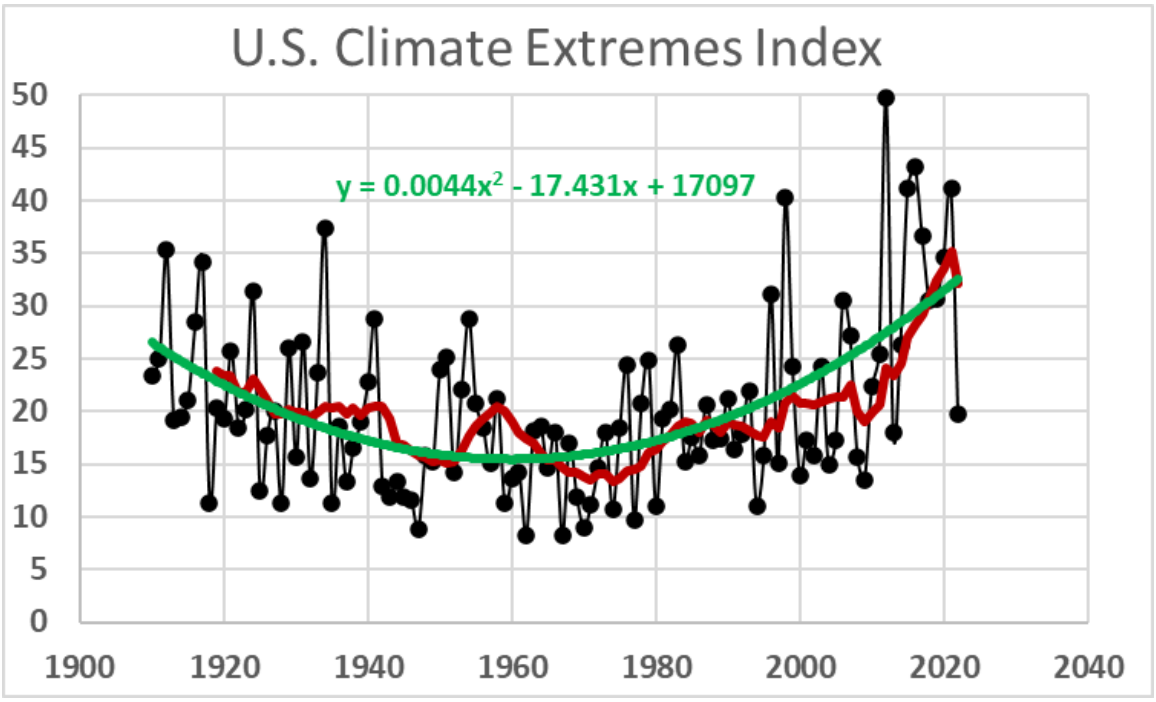
U.S. Drought Monitor Category	% of U.S.
D0 - Abnormally Dry	15.3%
D1 - Moderate Drought	13.5%
D2 - Severe Drought	12.3%
D3 - Extreme Drought	5.4%
D4 - Exceptional Drought	2.19%
Total Area in Drought (D1–D4)	33.39%



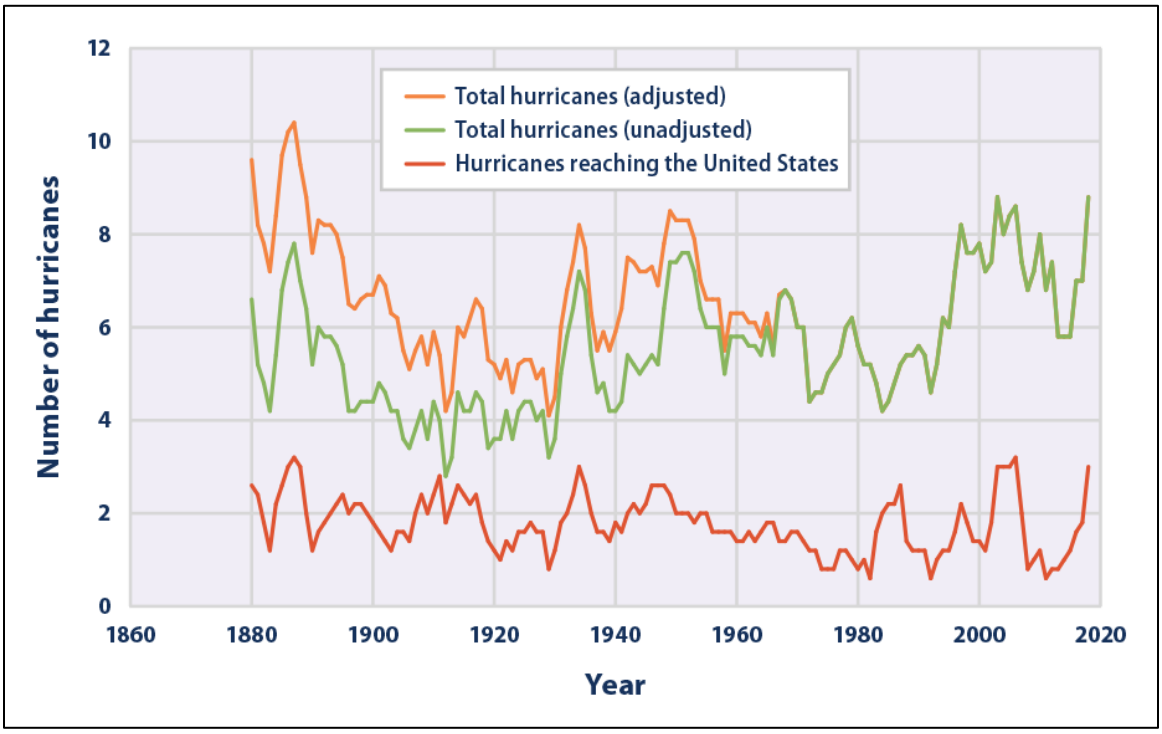
A linear fit from 1980-2020 yields about 2.5-mm/year.



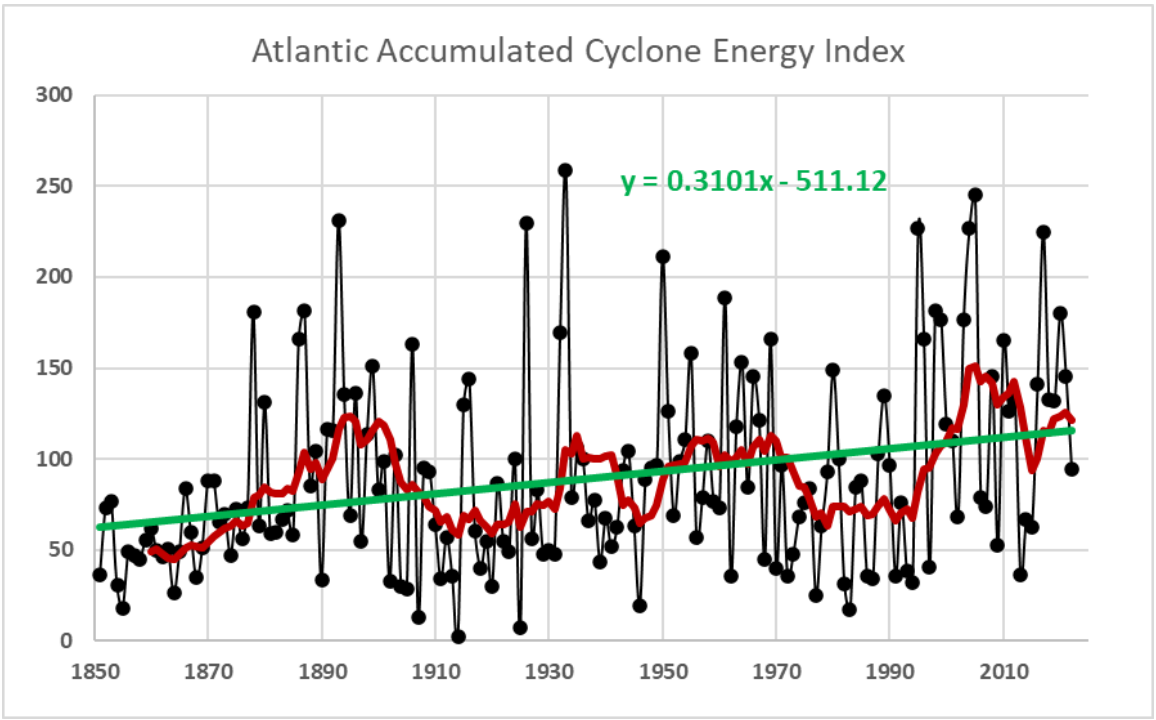
Melting sea ice does not contribute to global sea level.



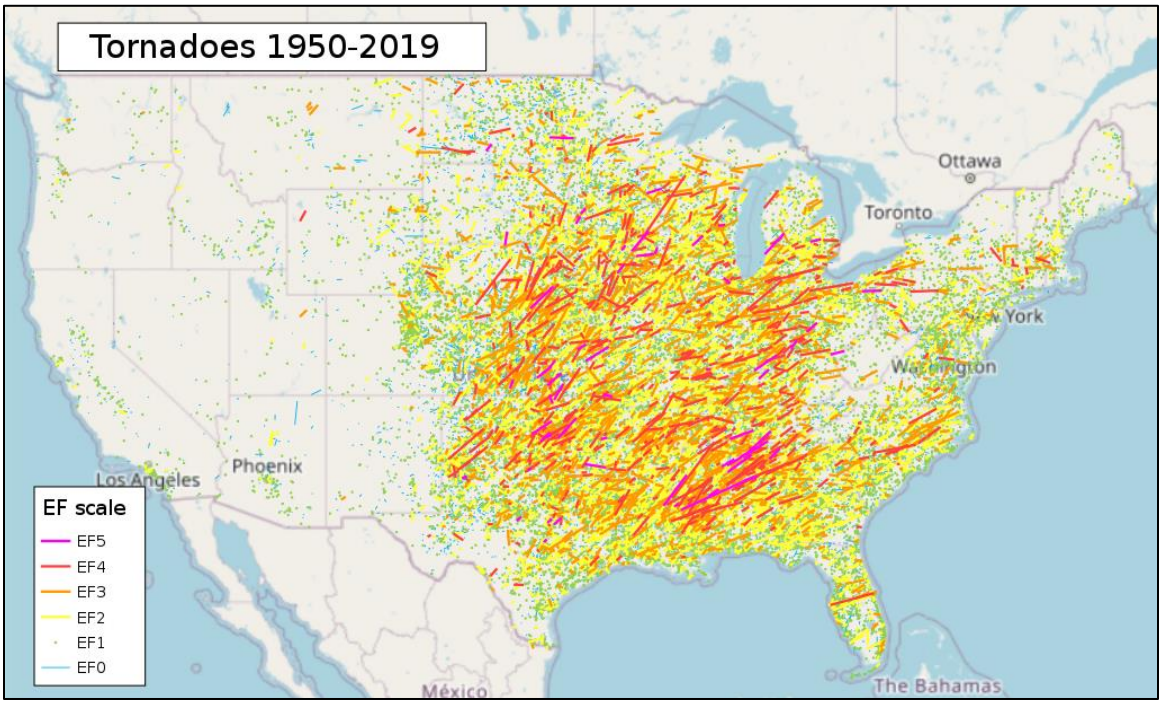
The red curve is the 10-years running mean and the green curve is the quadratic fit.

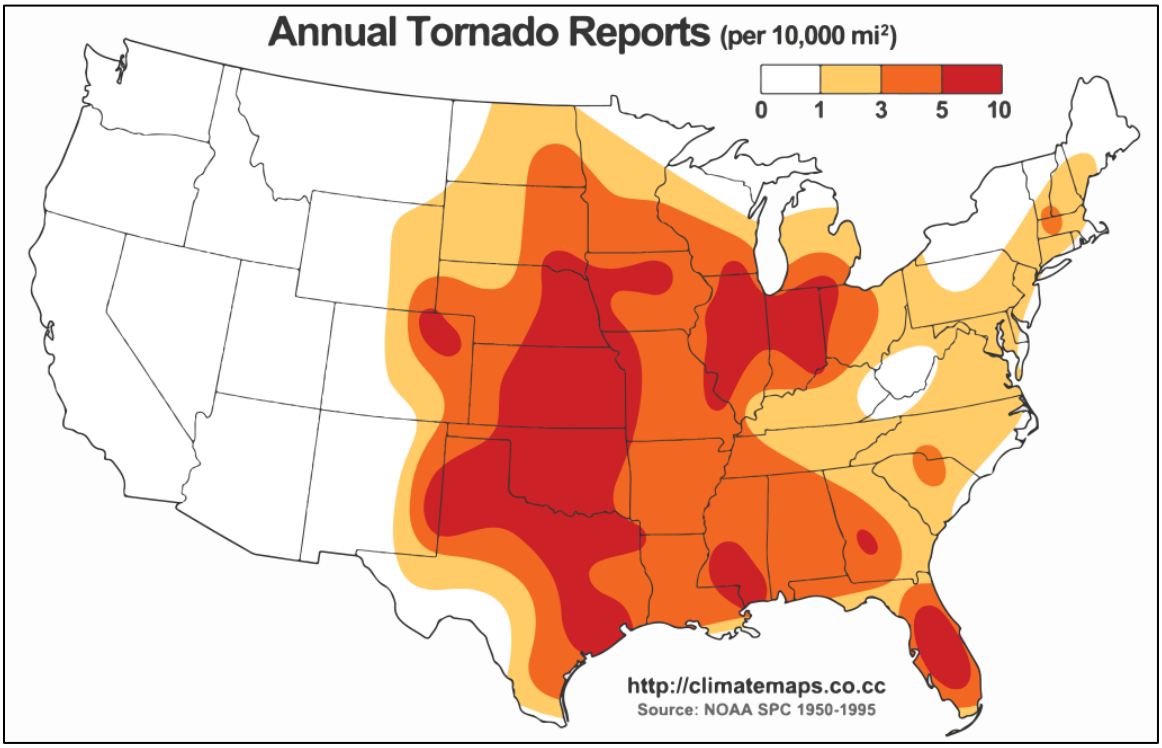


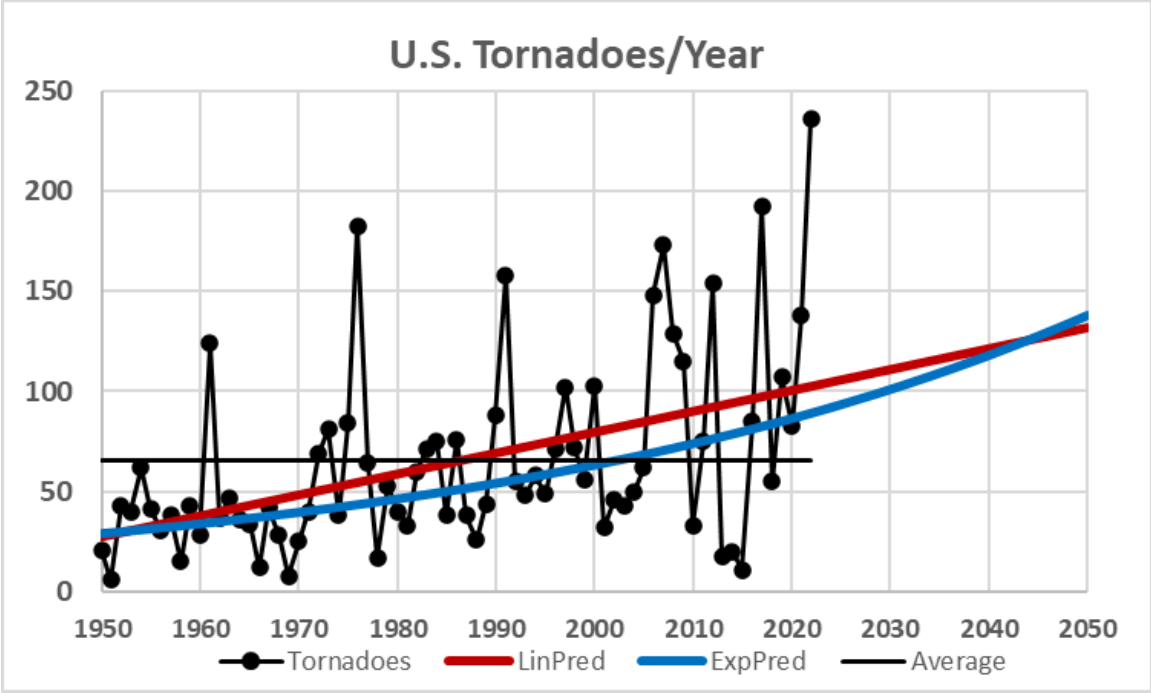
Hurricanes in the North Atlantic, 1878-2020

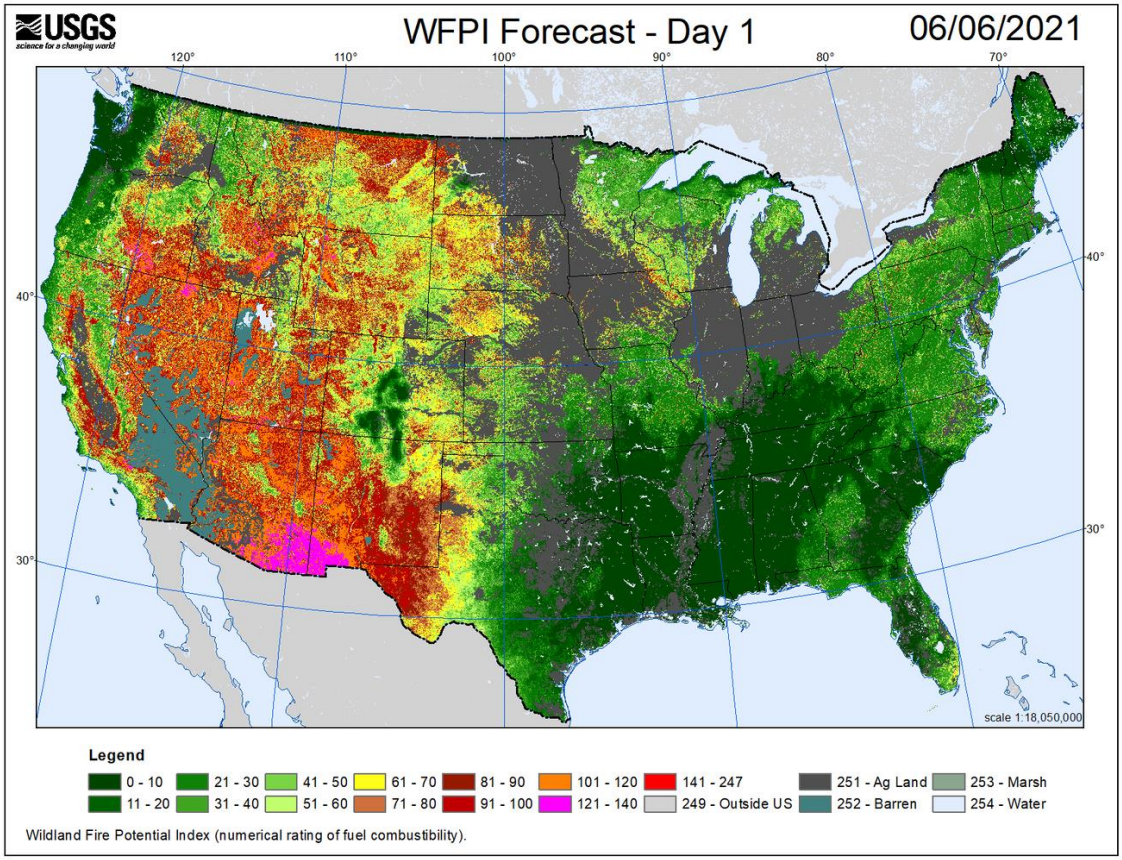


The red curve is the 10-years running mean and the green curve is the linear fit.

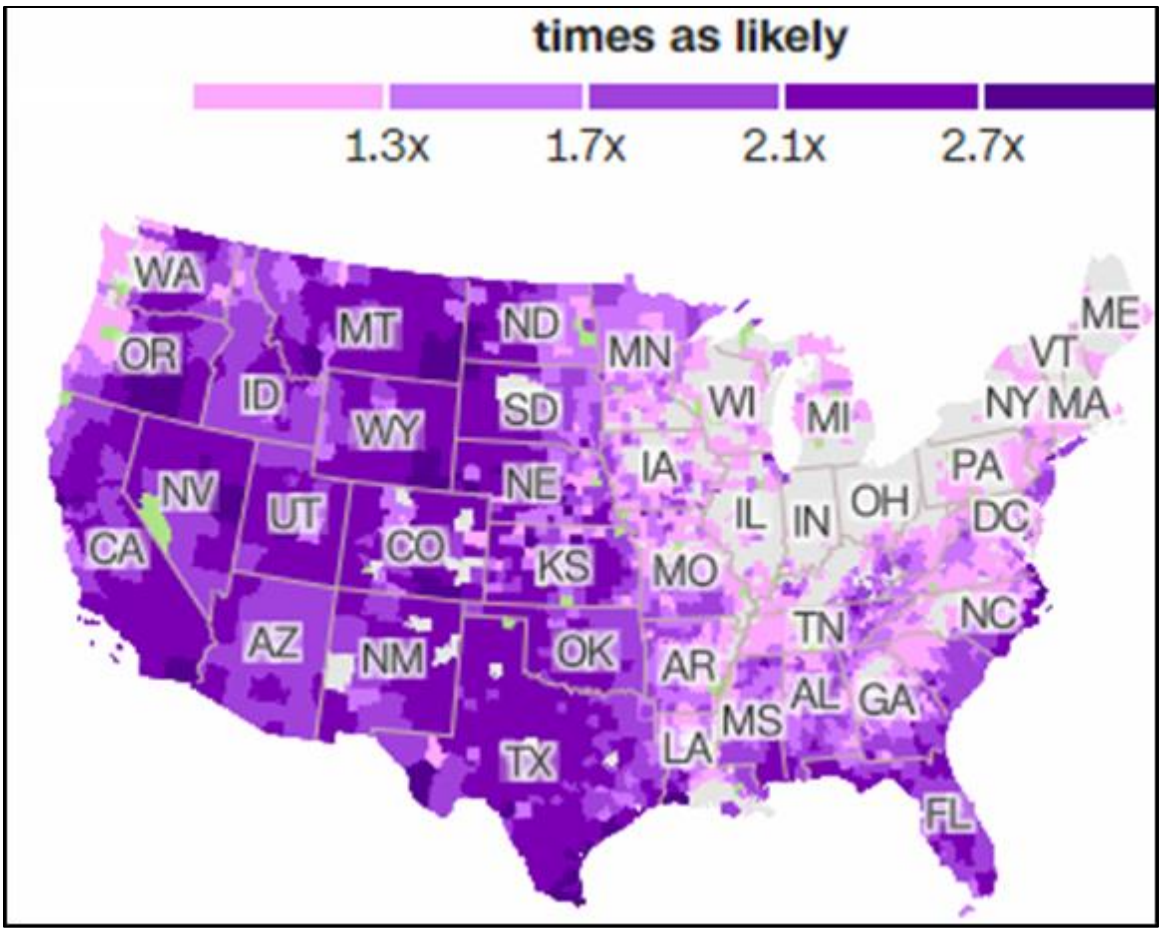

Tornadoes 1950-2019
Ottawa
Toronto
York
Phoenix
Los Angeles
México
The Bahamas
EF scale
EF5
EF4
EF3
EF2
EF1
EF0


Annual Tornado Reports (per 10,000 mi²)
0
1
3
5
10
http://climatemaps.co.cc
Source: NOAA SPC 1950-1995





U.S. Wild Fire Potential Index (WFPI)



Projected change in annual wildfire risk to properties over 30 years, among properties with any risk in 2022.

http://roperld.com/science/GlobalWarmingData.pdf