

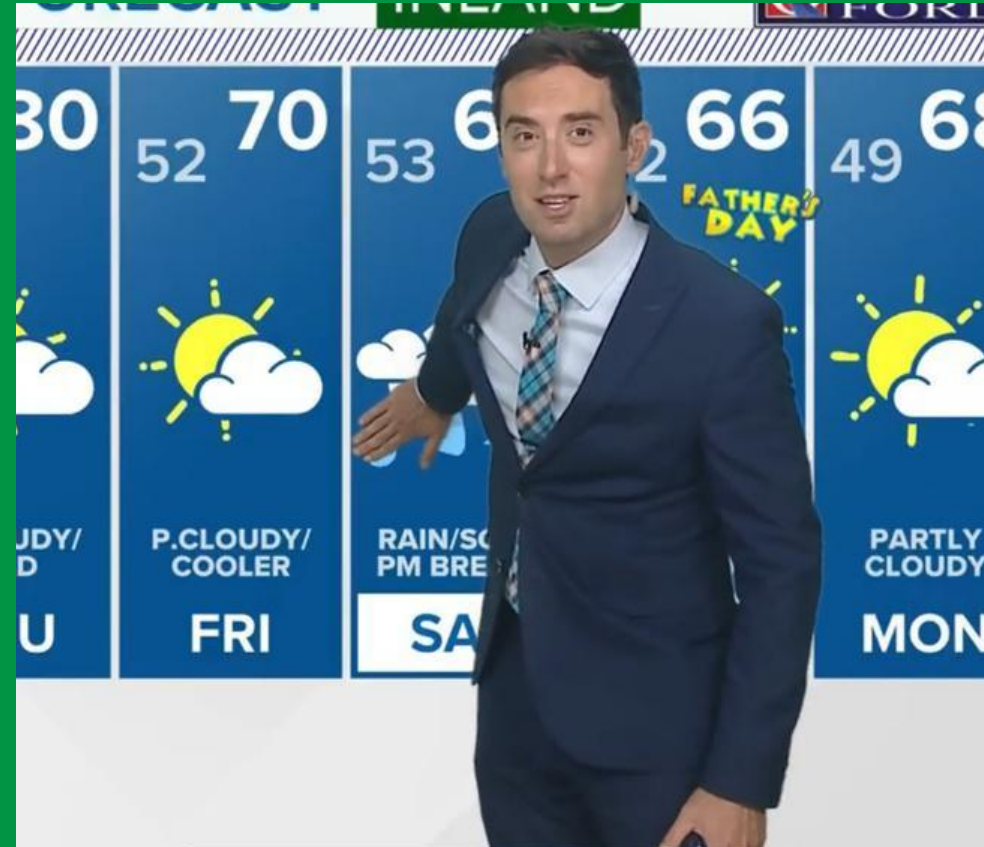


How we know it's us.
And how to talk
about it.



“Who’s this guy?”

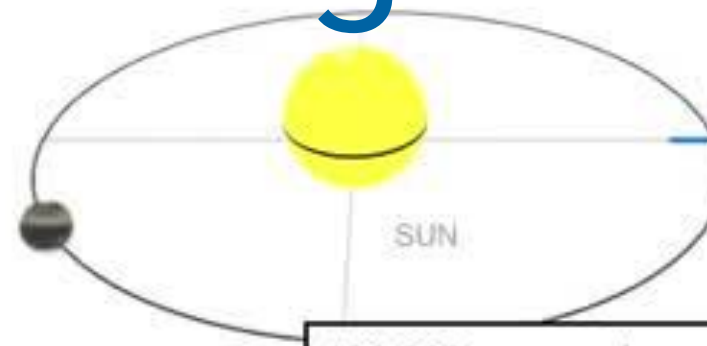
- Meteorologist for 20 years
- Local and national TV
- Climate communicator
- Now with Maine Conservation Voters



Climate has changed before

Orbital Cycles

Three periodic motions in Earth's orbit, known as Milankovitch cycles, contribute a predictable amount of variation to Earth's climate over time frames of tens of thousands to hundreds of thousands of years.



100,000-year cycles
Changes in Eccentricity
(Orbit Shape)

*Changes in eccentricity exaggerated so the effect can be seen. Earth's orbit shape varies between 0.0034 (almost a perfect circle) to 0.058 (slightly elliptical).

26,000-year cycles
Axial Precession
(Wobble)



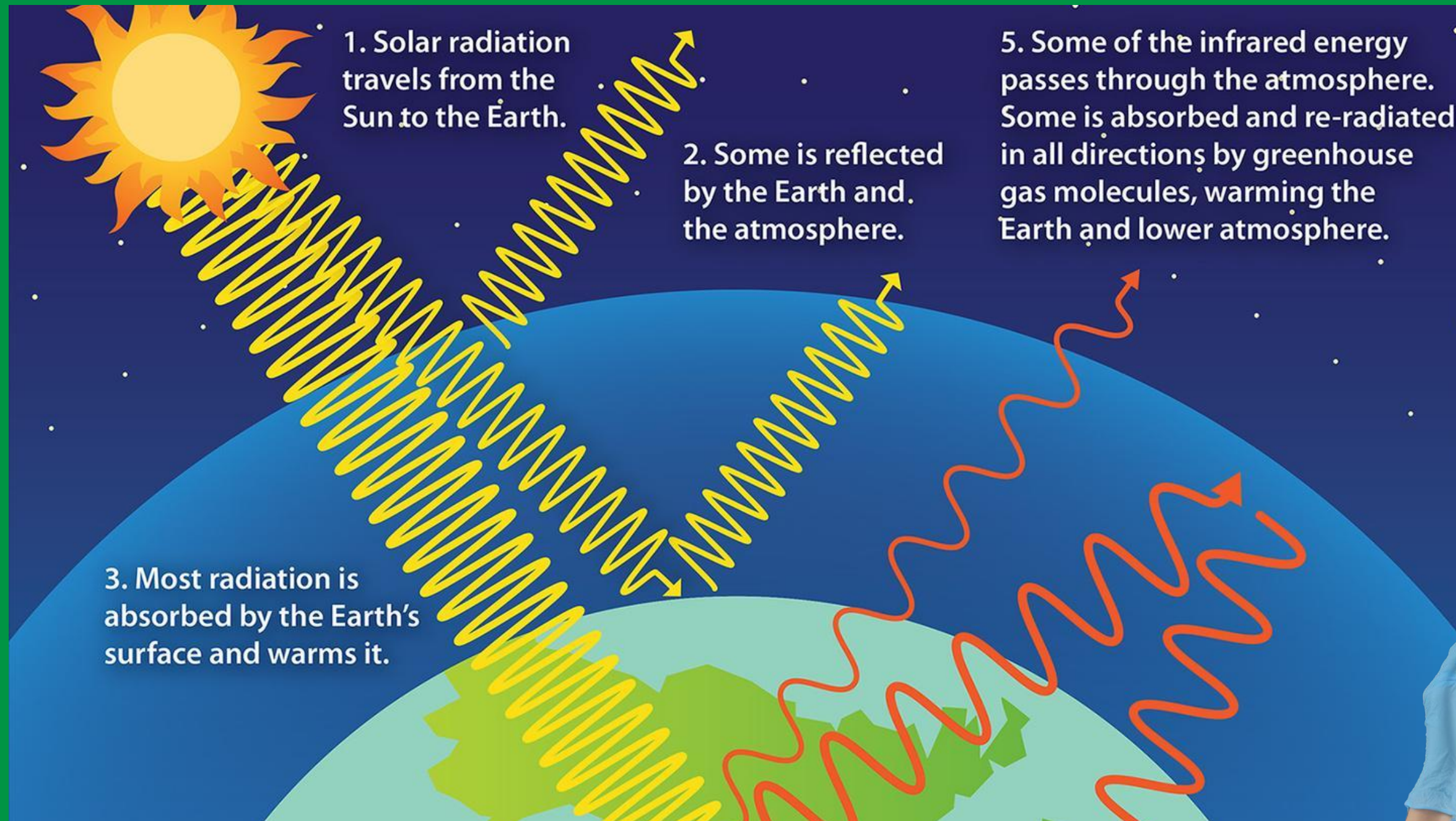
41,000-year cycles
Changes in Obliquity
(Tilt)

Relative to orbital plane

22.1-24.5°



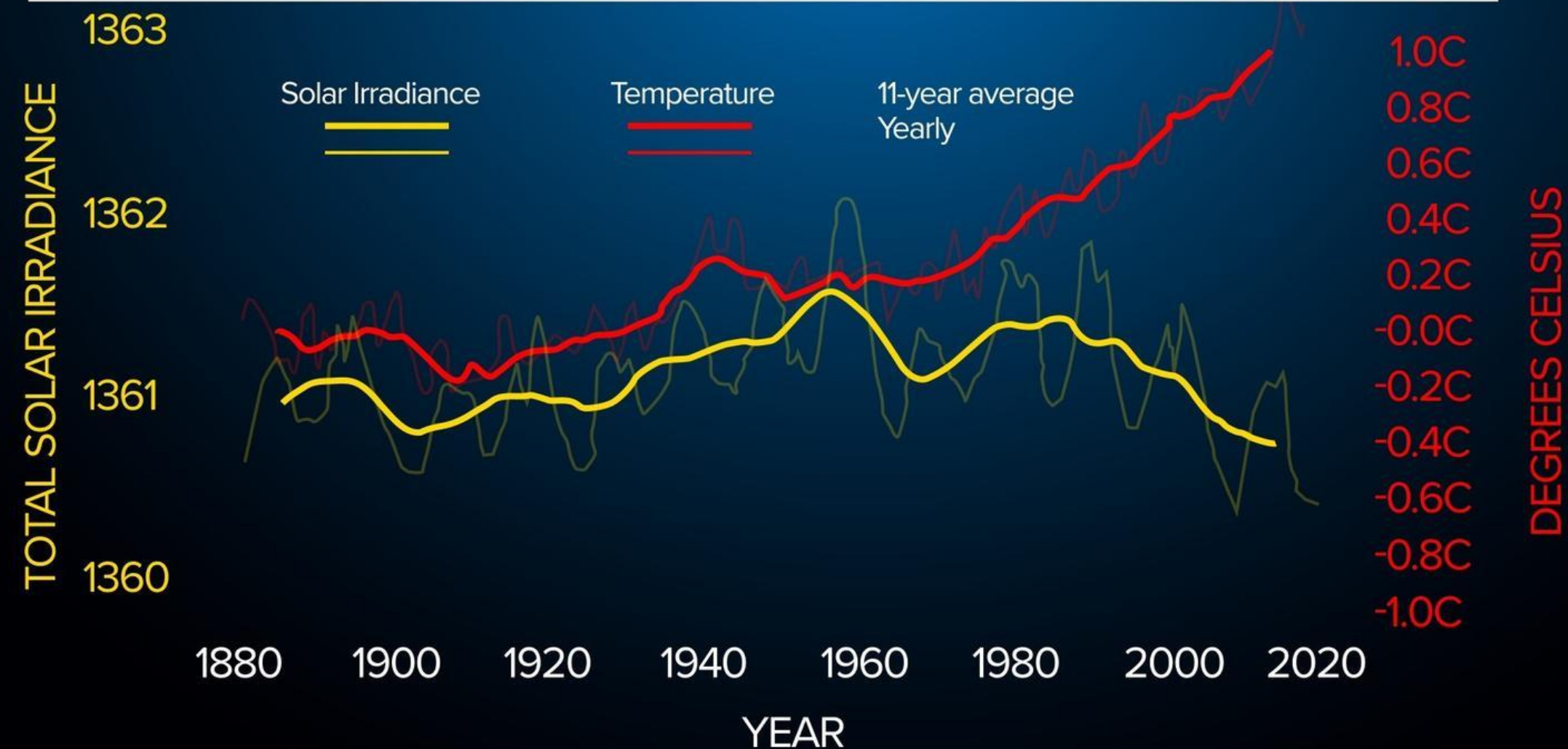
How we know it's us



GHG have complex molecular structures that vibrate upon absorbing longwave infrared radiation. Average global temp without GHG= -2 F vs 57 F.

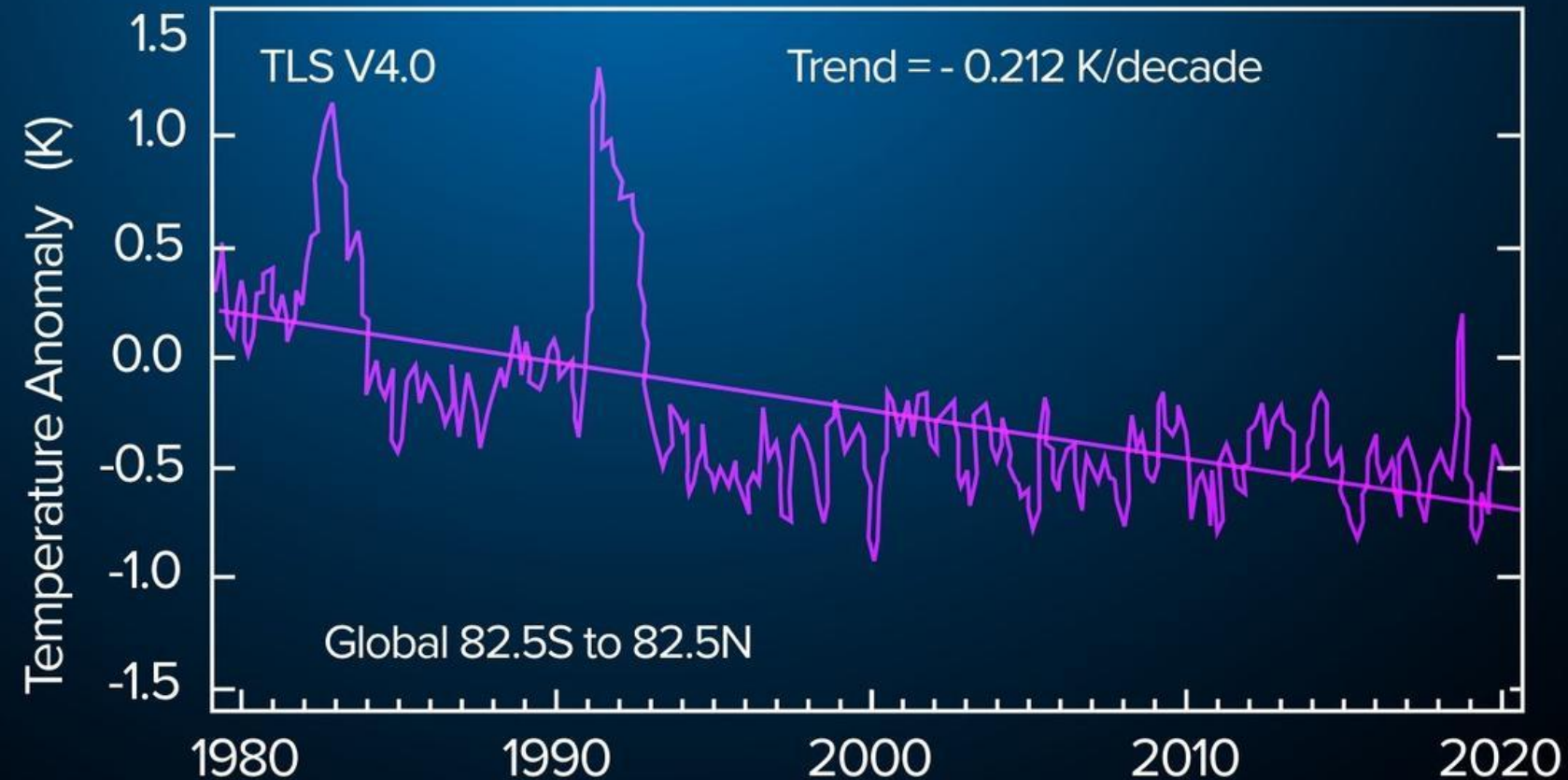
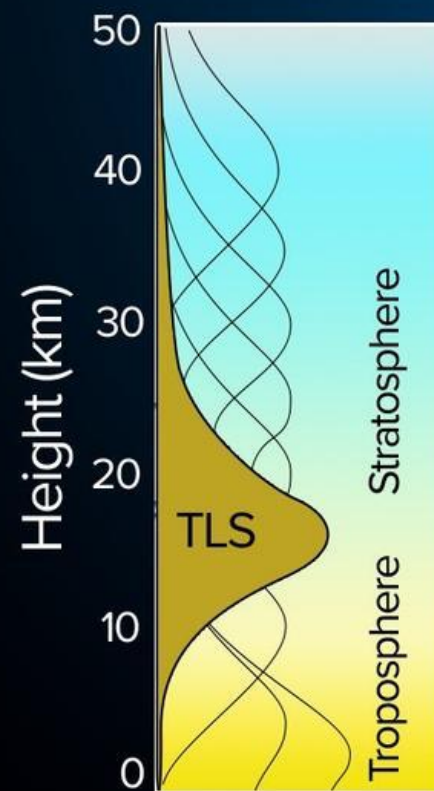
It's not the sun

TEMPERATURE VS SOLAR ACTIVITY



Incoming sun energy to the Earth, called solar irradiance, has remained flat or actually decreased as our temperatures have rapidly increased.

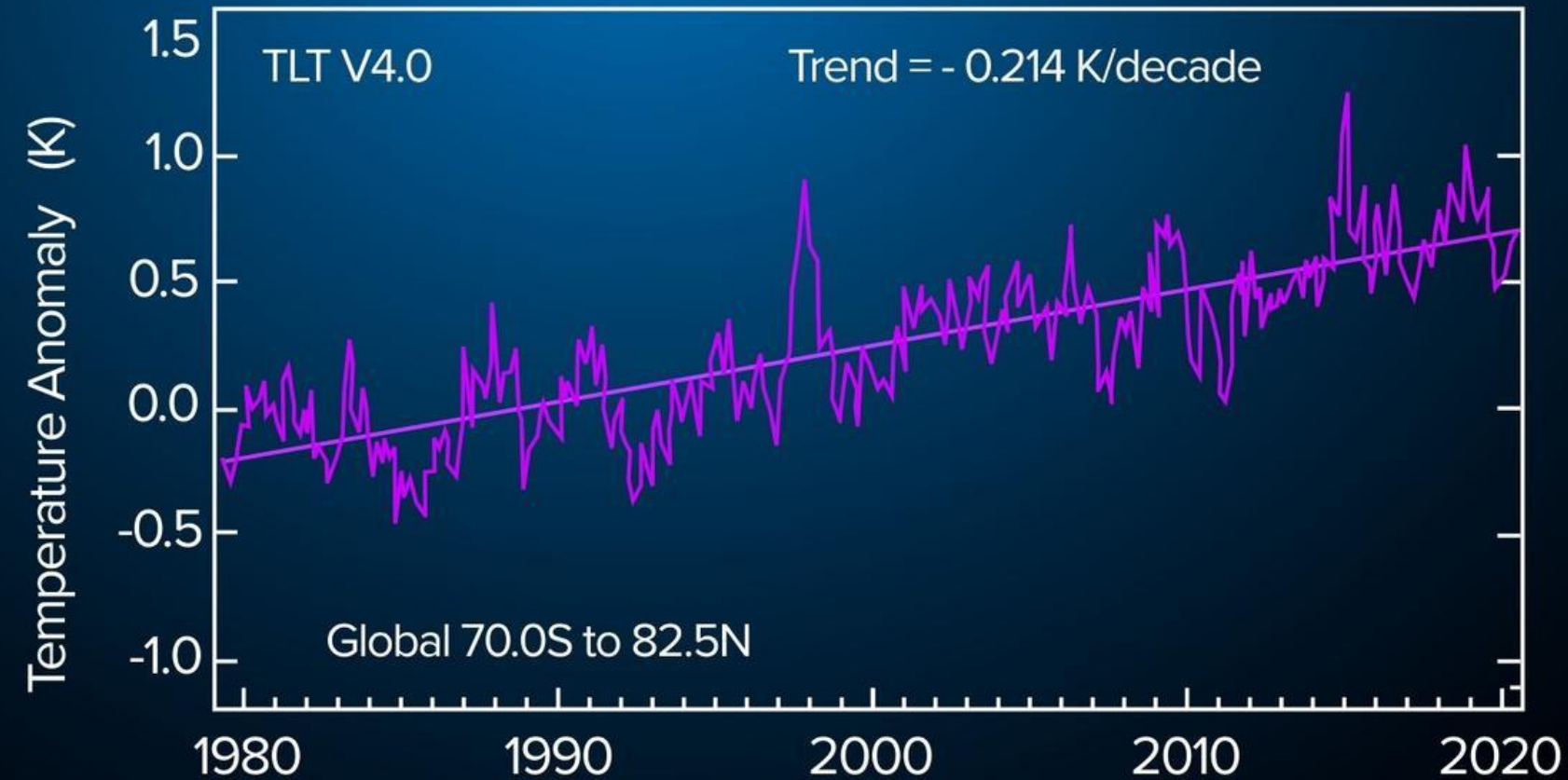
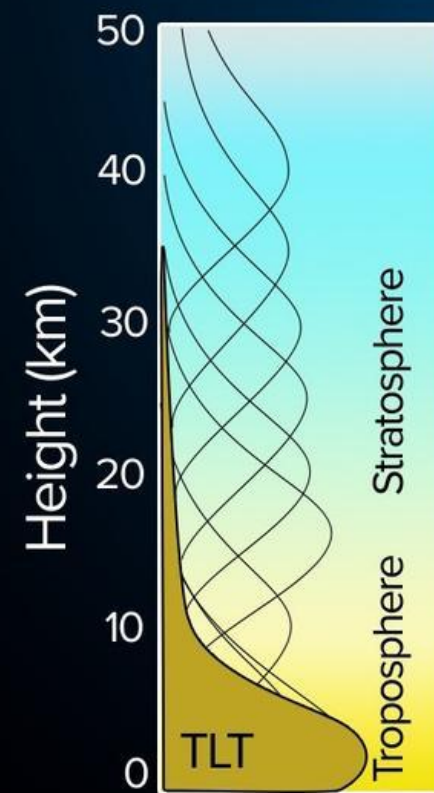
Strosphere trend



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Cooling trend in stratosphere due to trapping of heat below the layer in the troposphere.
Further evidence this heat is not from the sun/space.

Troposphere trend

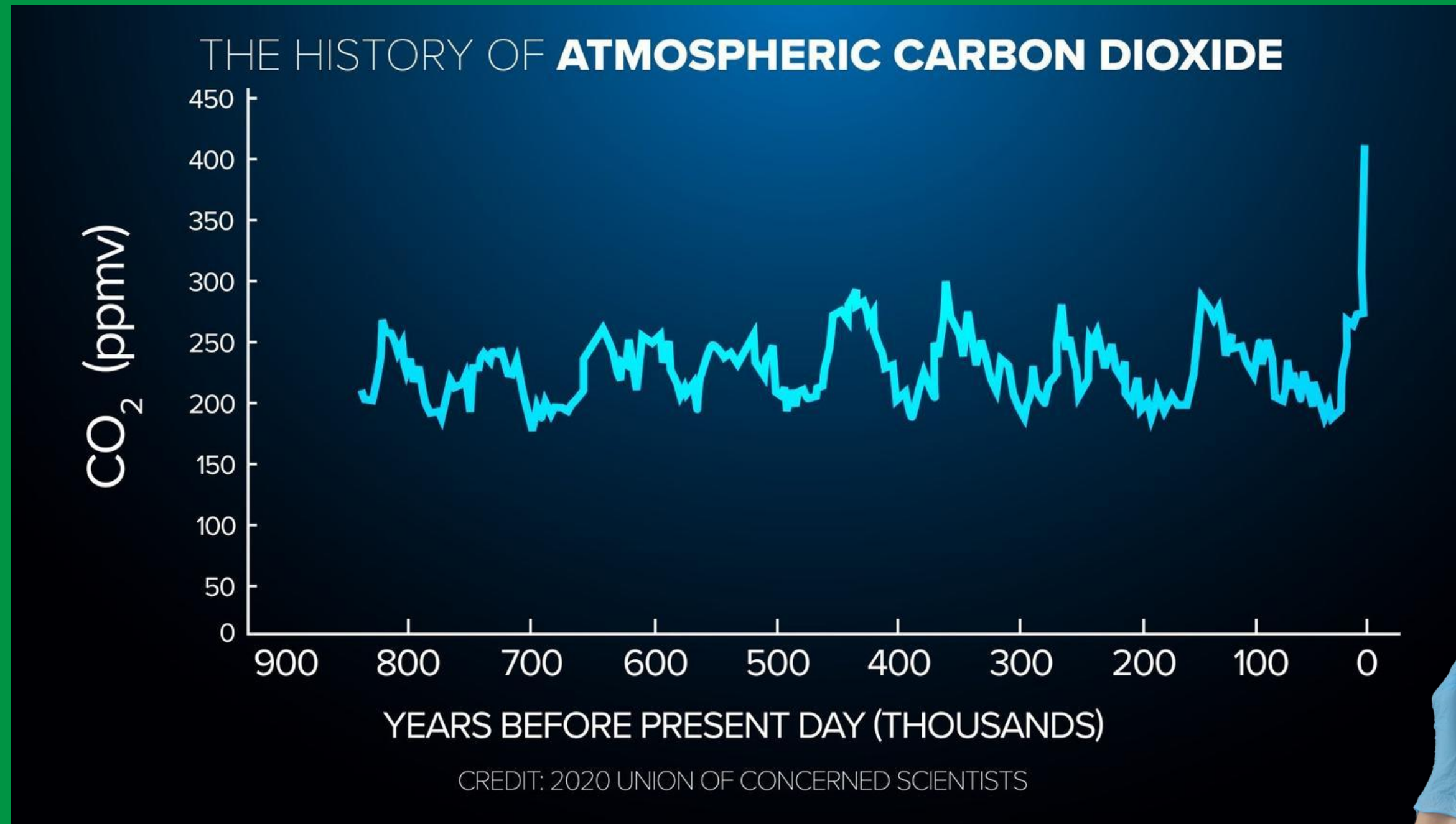


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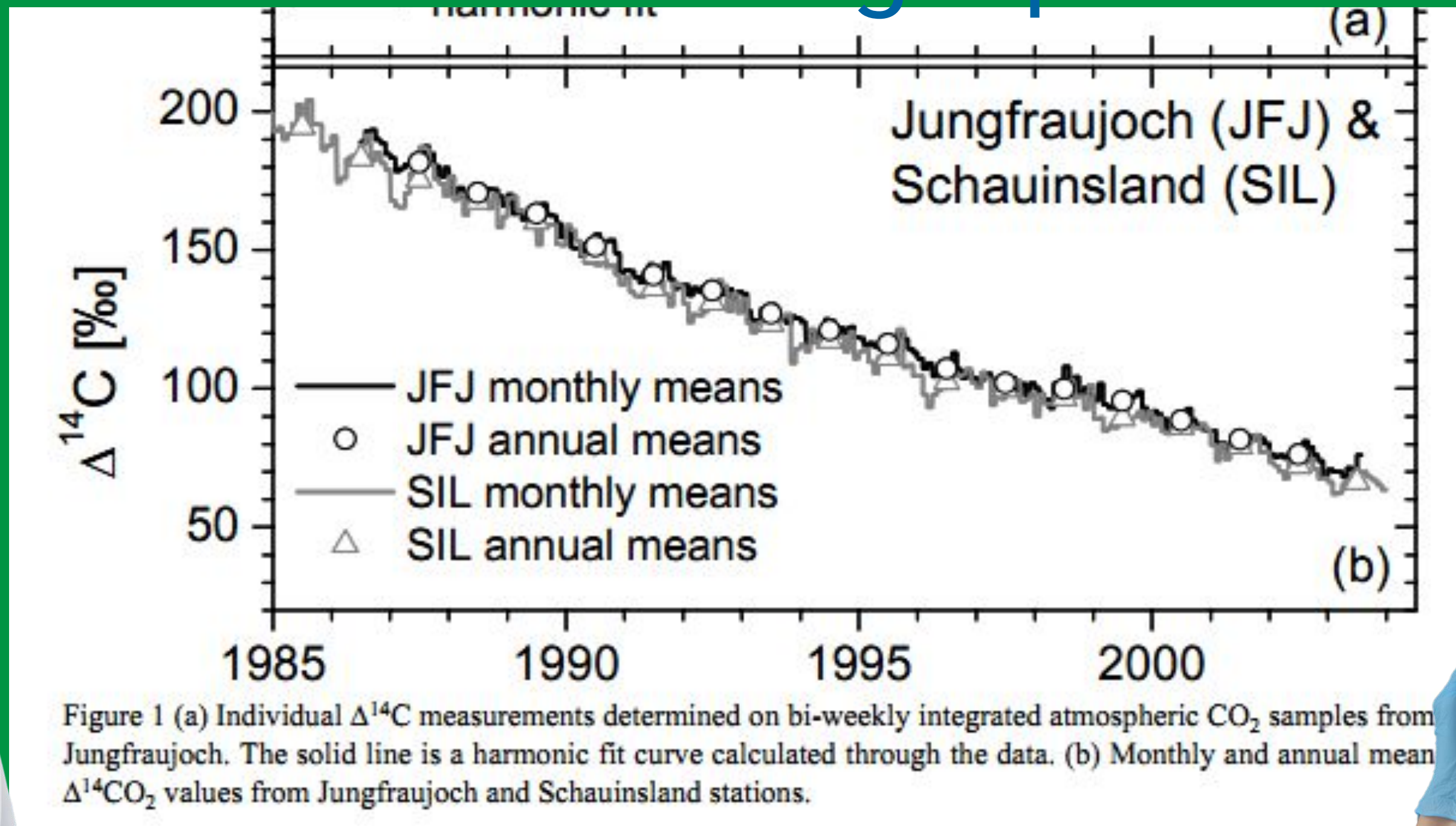
Meanwhile troposphere warming rapidly. Most likely the fastest in history. This is due to emissions of GHG.

CO₂ Spike



Using ice cores that contain trapped air bubbles from hundreds of thousands of years ago, scientists have recreated the history of carbon dioxide in our atmosphere.

Fossil fuel fingerprint



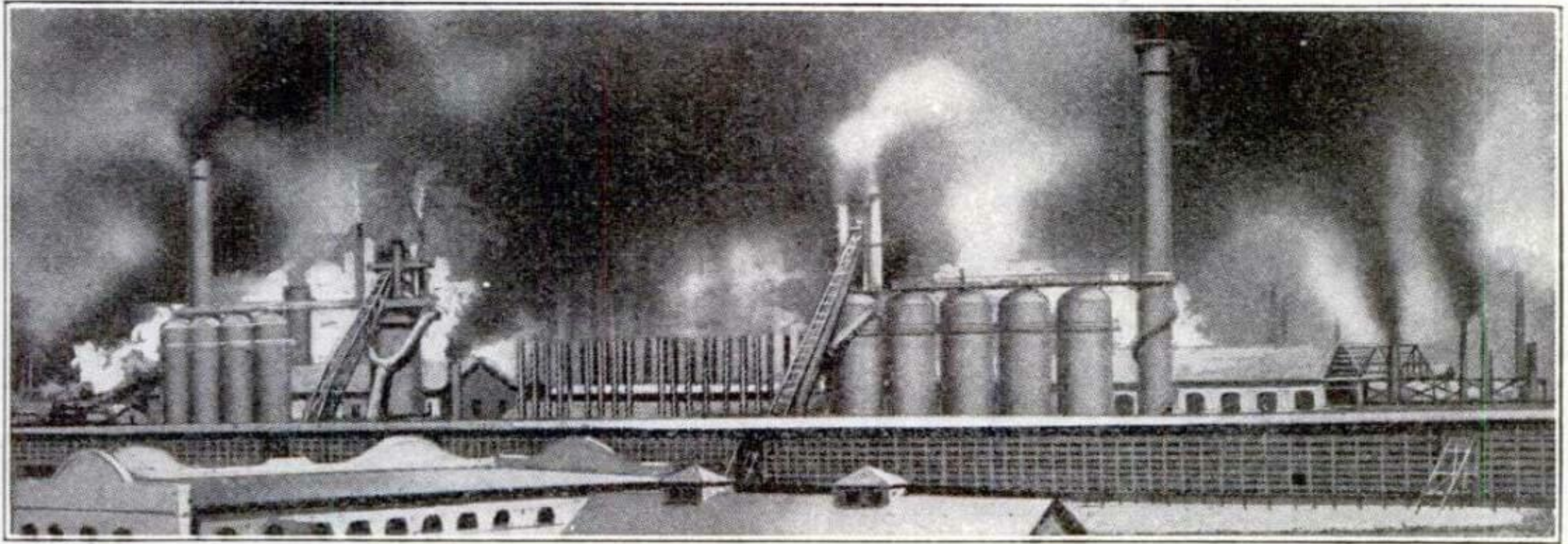
Naturally-occurring carbon isotopes: C12, C13, and C14. C from fossil fuels has been in the ground for so long that the C14 isotopes are almost entirely gone.

We've known for a while

March, 1912

POPULAR MECHANICS

341



The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.

What we can do better

Finger wagging and judging
turn people off.

Allow people to be
contradictions.

People have a lot of other
problems to think about.

You can't "win" any
argument in one sitting.

Gloom and doom don't work.
"Why bother?"

Phrases I don't like

Ban,
Eliminate

Anything
in metric

climate
crisis

carbon
footprint

net zero

climate
denier

green
energy

tipping
point

Don't forget about pollution



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Fossil fuel air pollution responsible for 1 in 5 deaths worldwide

By Anna Miller • February 9, 2021



New research [↗](#) from Harvard University, in collaboration with the University of Birmingham, the University of Leicester and University College London, found that mo

[Sulfur dioxide](#)
[Nitrogen oxides](#)
[Particulate matter](#)

Missed message: EVs

“Mandates”, “Eliminating”

Didn't explain power source

Automakers didn't invest
in fast charging

“Save the planet” sales pitch



Better message: EVs

“Mandates”, “Eliminating”

New piece of technology

Didn't explain power source

Cleaner due to motor vs engine

Automakers didn't invest
in fast charging

Telsa model. If you build it, they
will buy.

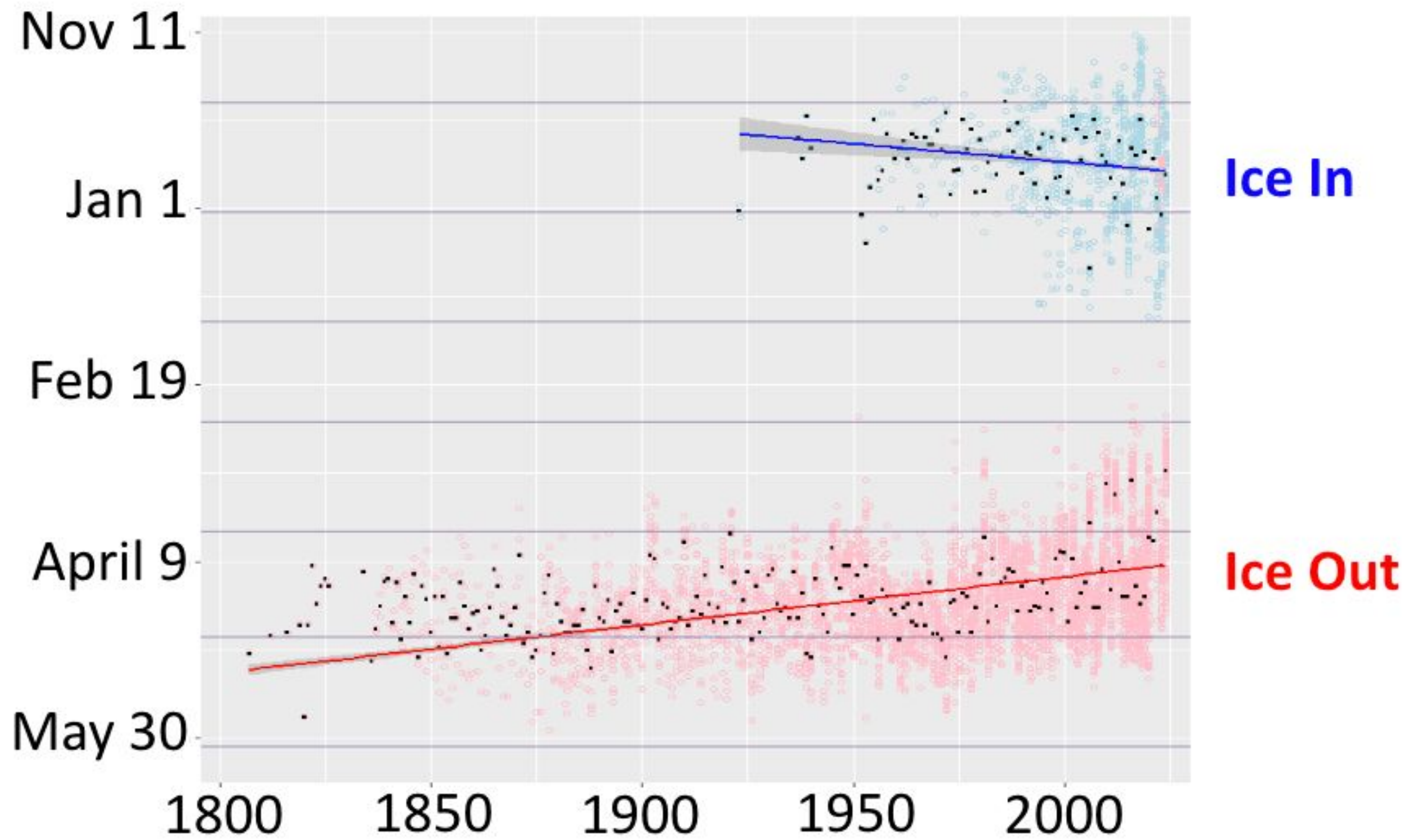
“Save the planet” sales pitch

0-60 in 3 seconds



Maine: Warmest Years

Rank	Year	Mean Avg Temperature
1	2020	49.4
2	2012	49.2
-	2010	49.2
4	2024	49.1
5	2023	48.8
-	2021	48.8



What does this mean for your lake?

Stress on cold-water fish
temperature and oxygen
depletion

Expansion of warmwater
species northward, harming
smaller native fish

More hospitable habitat for
more invasive species

Altering lake plant and
animal communities

What heavier rain does to your lake

More phosphorus and other pollutants washing into lakes

Phosphorus feeds algal blooms that degrade water quality

Harmful algal blooms produce toxins that threaten drinking water supplies, recreation, aquatic life, and human health

Climate and Lakes: Disconnect. “Looks fine”



MCV Mailing/Email List*



You don't have to...

but

I'll know if you don't.