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The Discovery Of Global Warming

Spencer Weart

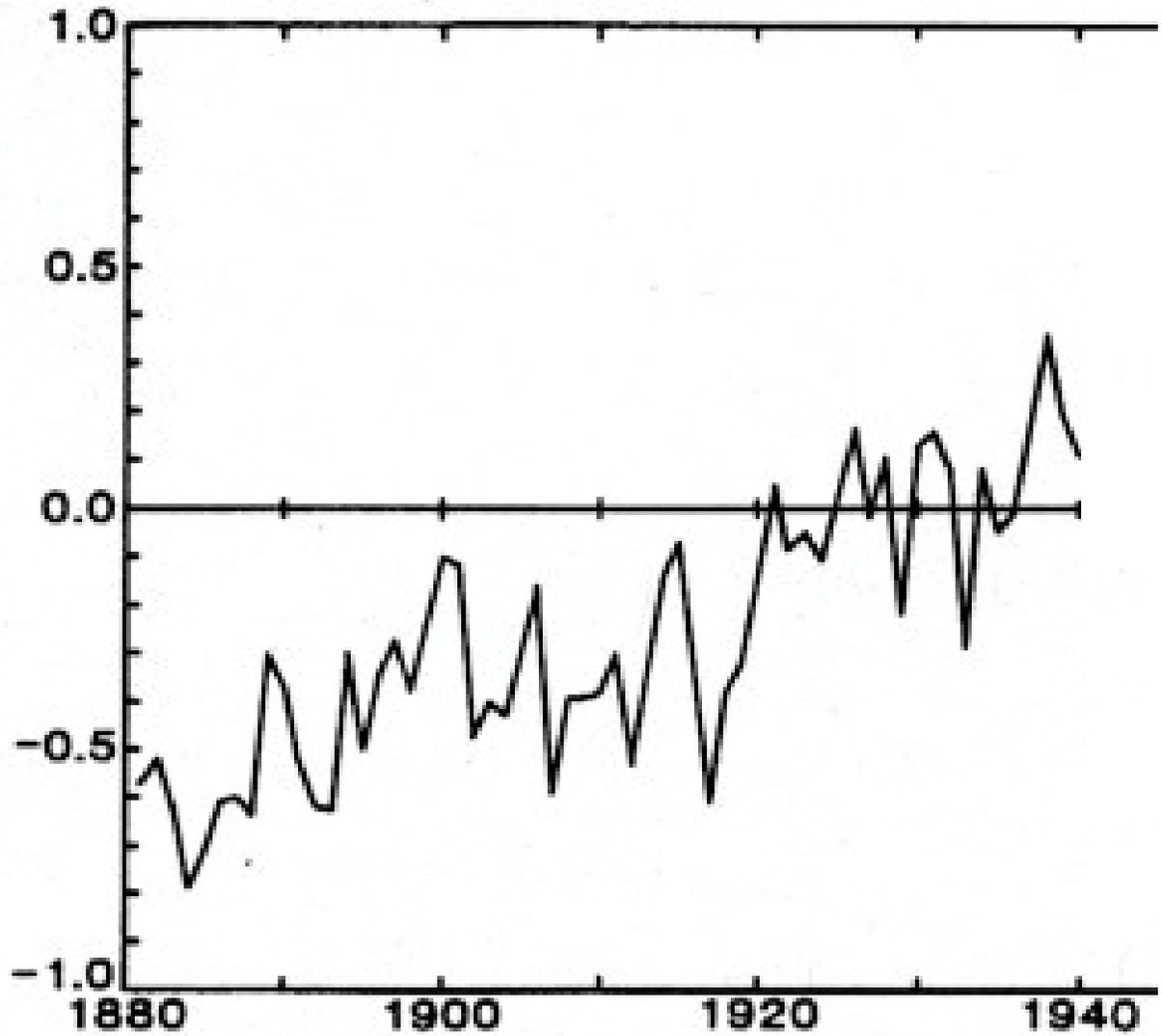
Center for History of Physics

American Institute of Physics



Gaffers who claim that winters were harder when they were boys are quite right... weather men have no doubt that the world at least for the time being is growing warmer.

—Time, 1939



Northern Hemisphere Temperatures 1880-1940

*Meteorologists do not know whether
the present warm trend is likely to last
20 years or 20,000 years.*

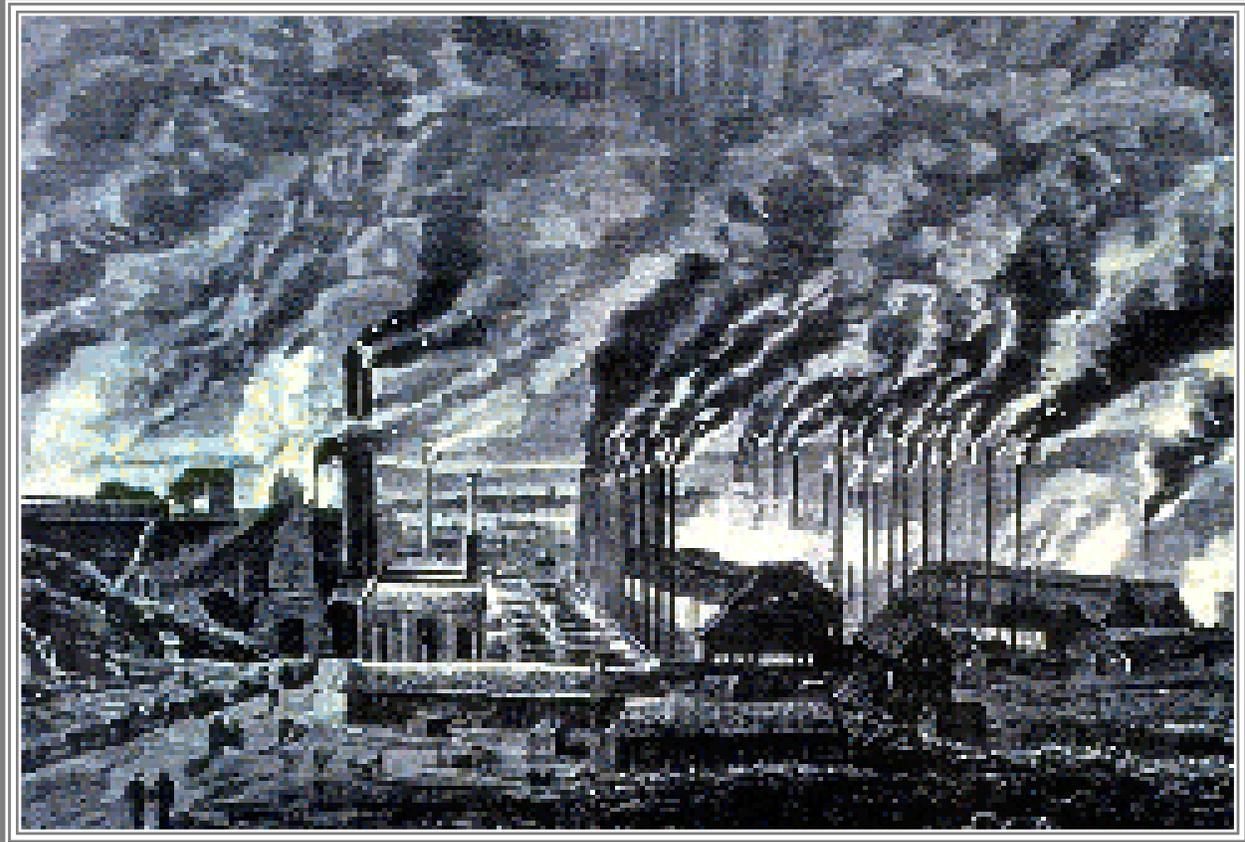
—Time, 1939



Arrhenius

As a dam built across a river causes a local deepening of the stream, so our atmosphere, thrown as a barrier across the terrestrial rays, produces a local heightening of the temperature at the Earth's surface.

—John Tyndall, 1862





Svante Arrhenius

*We may hope to enjoy
ages with more equable
and better climates, ages
when the Earth will
bring forth much more
abundant crops than at
present...*

—1908



*The Balance
of Nature*



The Dust Bowl 1930s

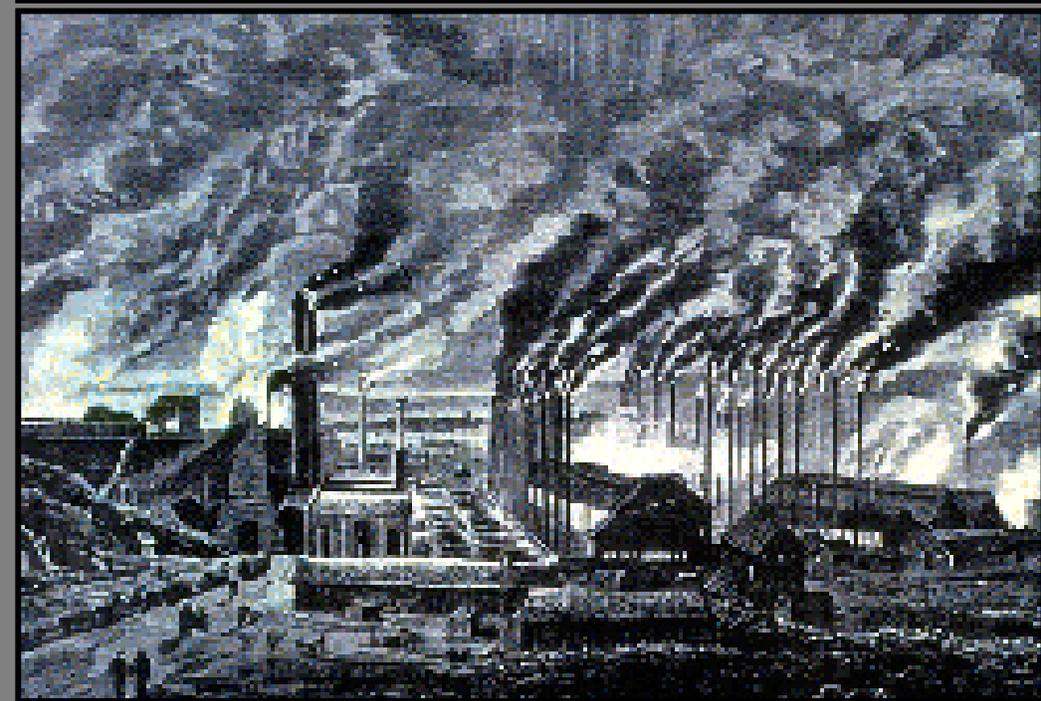


*Everyone has his own theory —
and each sounds good — until the
next lad comes along with his
theory and knocks the others into
smithereens.*

—Baxter, 1953



Roger Revelle in 1936



*Large numbers of
people wonder whether
the atomic bomb is
responsible for it all.*

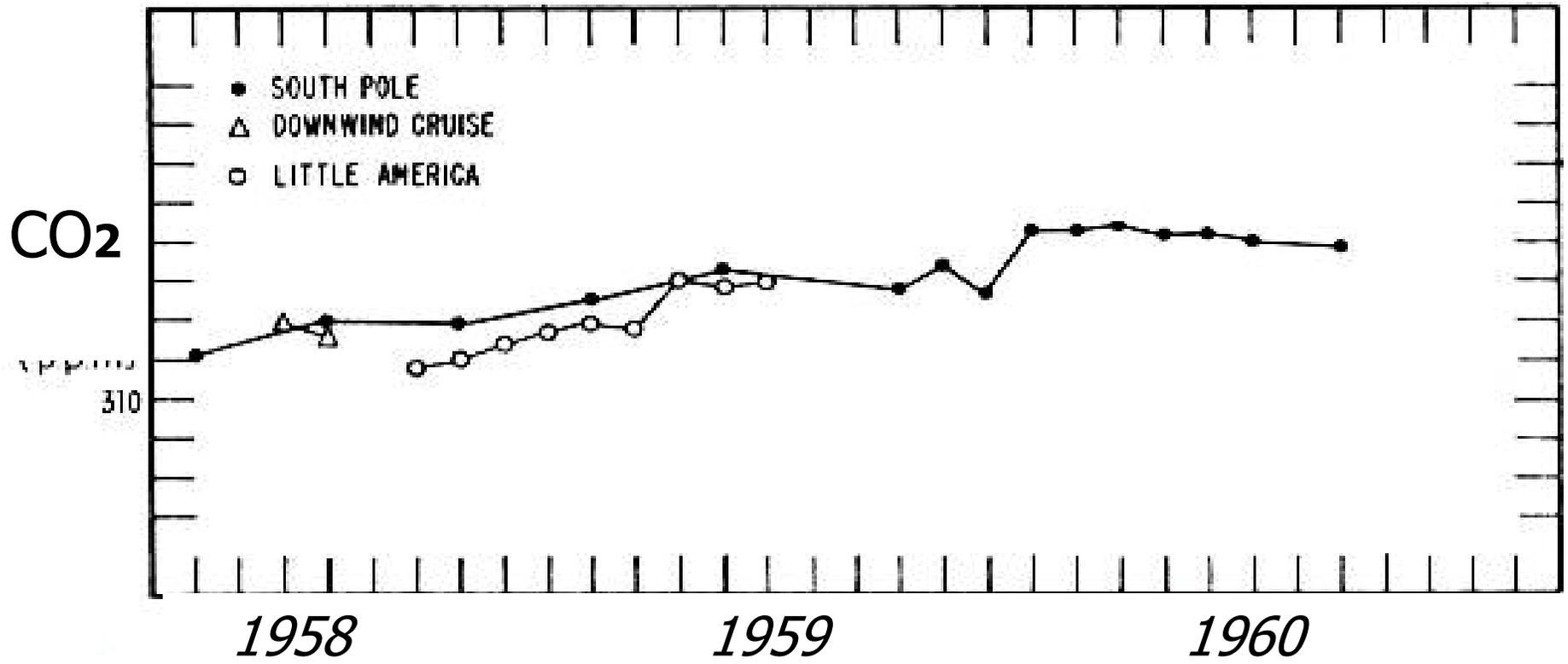
—This Week, 1956



*Human beings are
now carrying out a
large scale geophysical
experiment ...*

— 1957

Revelle ca. 1957



David Keeling's Measurements of Carbon Dioxide

There would seem to be every reason for producing as much carbon dioxide as we can manage. It is helping us towards a warmer and drier world.

— Cook, 1957

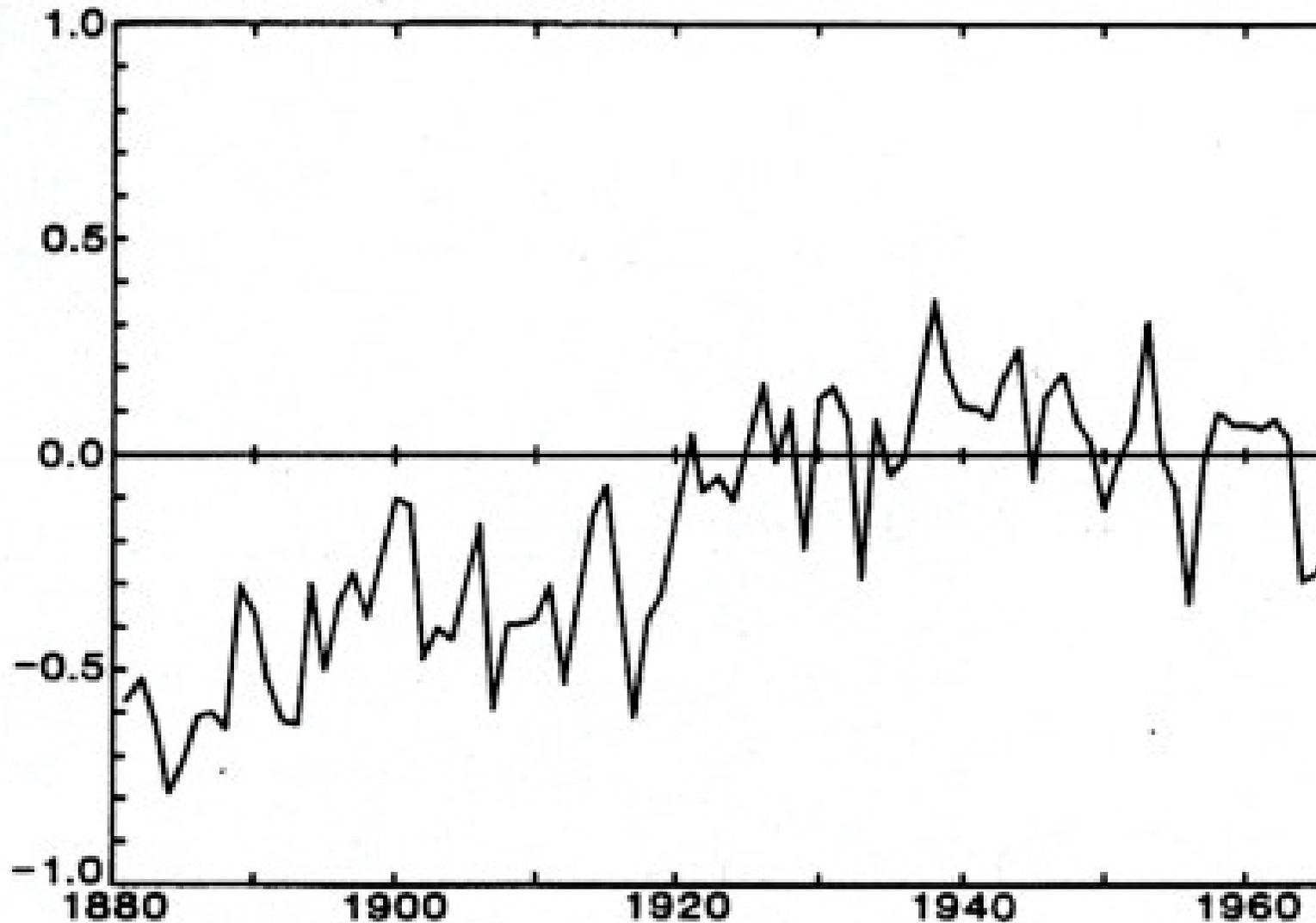


Africa, 1972



Grand Canyon, 2003





Northern Hemisphere Temperatures 1880-1960



Reid Bryson

*... a billion
people
starving...*

–Fortune 1974

The climatic system is so robust... that man has still a long way to go before his influence becomes great enough to cause serious disruption....

— B.J. Mason, 1976



*The Balance
of Nature*

MANIAC I

Jule Charney

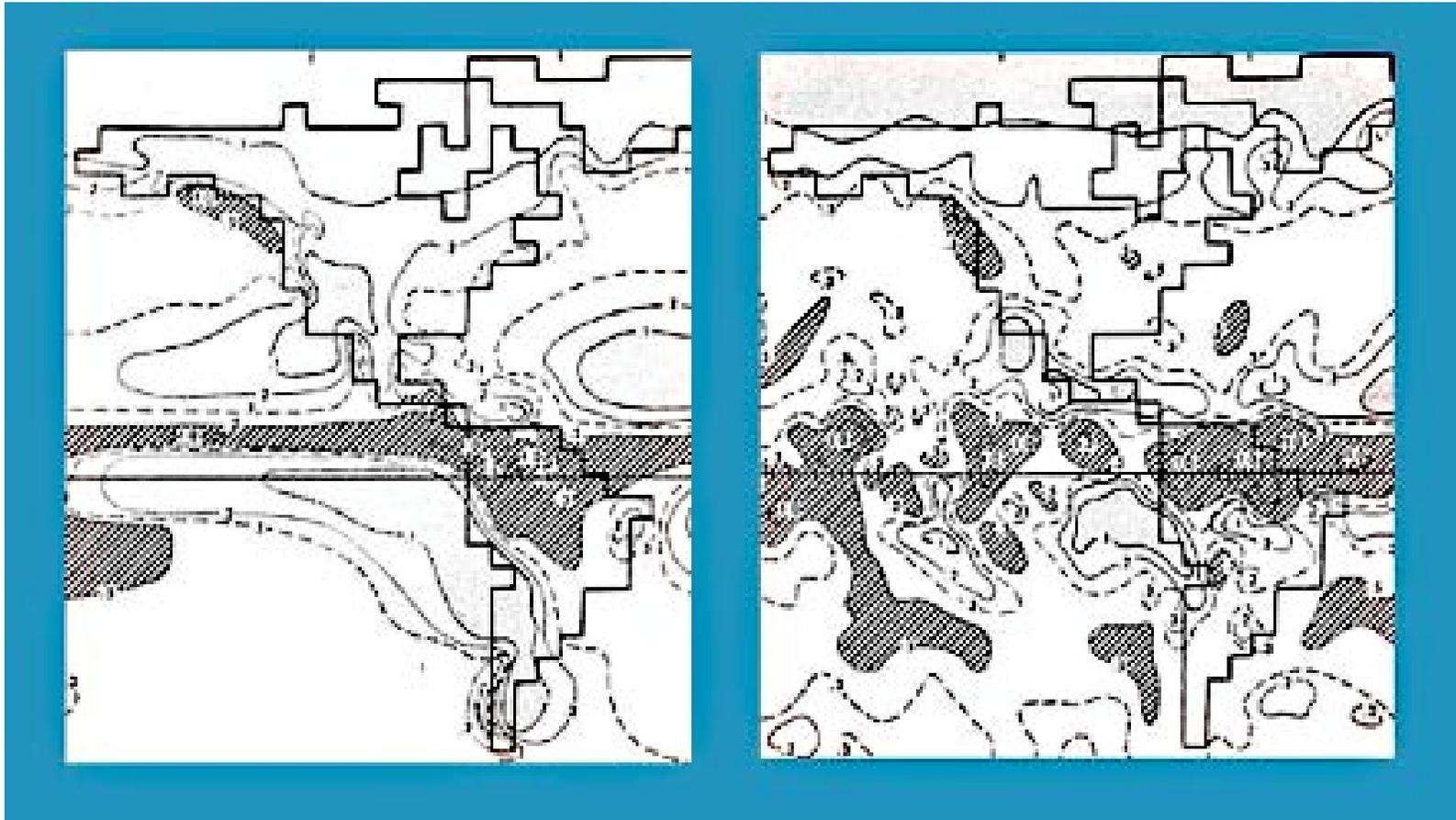
**Norman
Phillips**



**Institute for Advanced Study
Meteorology Group 1952**

Suki Manabe, 1960s





Precipitation:

The real world

Manabe's world (1975)

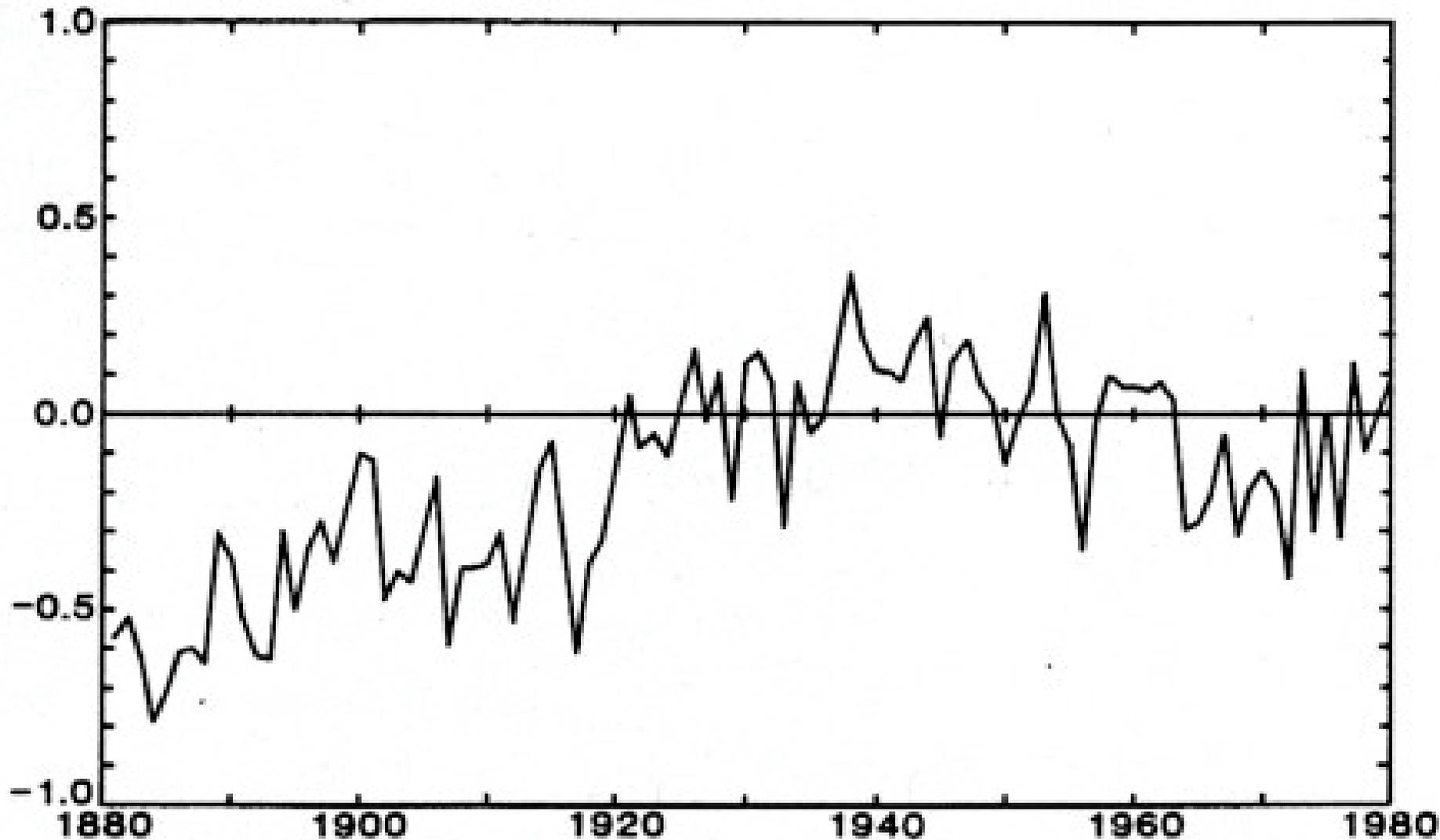
National Academy of Sciences

Charney Panel, 1979

1½ – 4½ °C rise

for doubled CO₂

(in the next century)



Northern Hemisphere Temperatures 1880-1980



Jim Hansen

It's time to stop waffling, and say that the evidence is pretty strong that the greenhouse effect is here.

—1988



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Global Warming Treaty

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Global Climate Change Cannot be Predicted

ENVIRONMENT

CLIMATE CHANGE

CIVIC ENVIRONMENTALISM

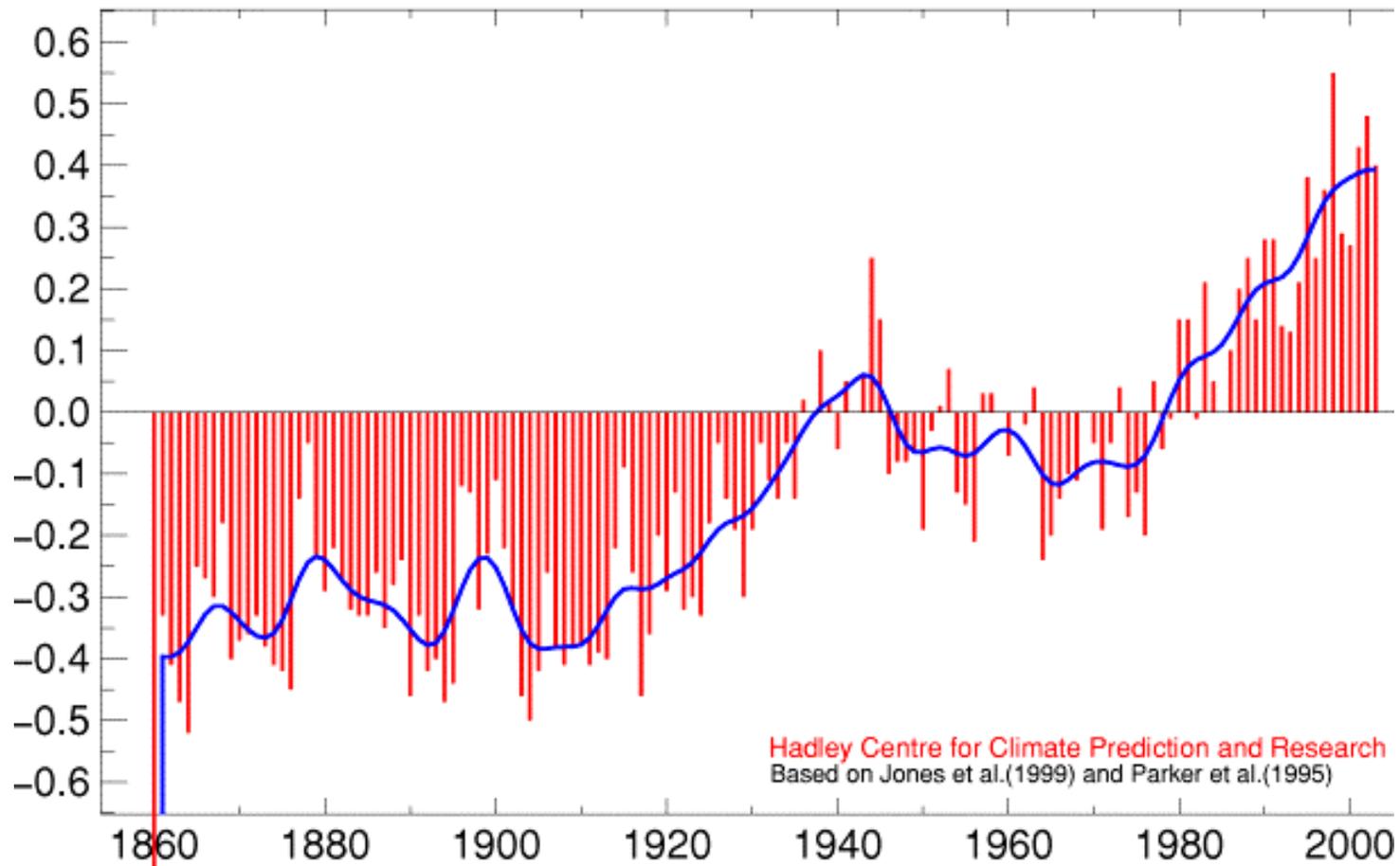
***A voice for business
in the global warming debate***

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GCC GLOBAL CLIMATE COALITION

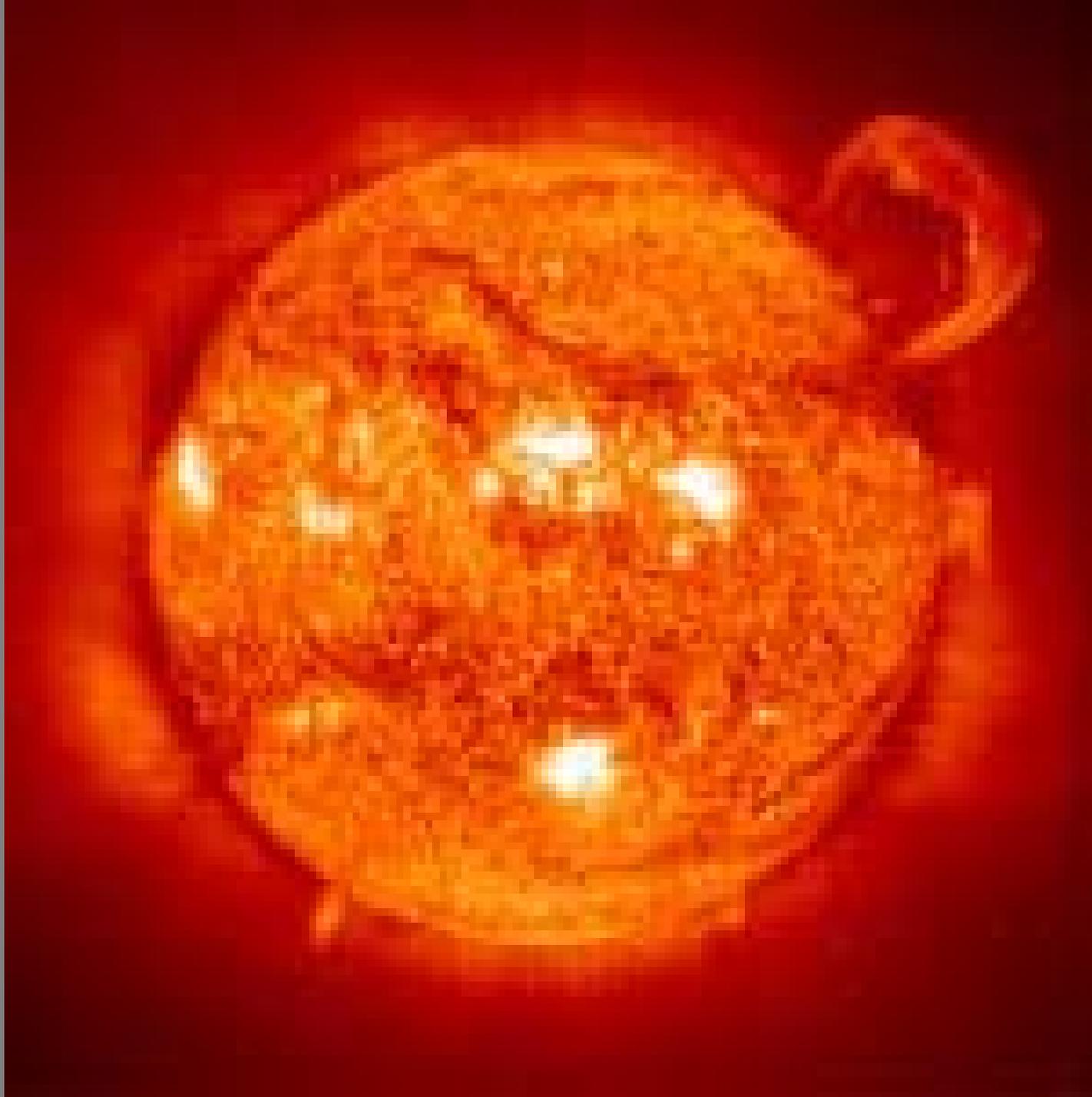
FACT OR FICTION?

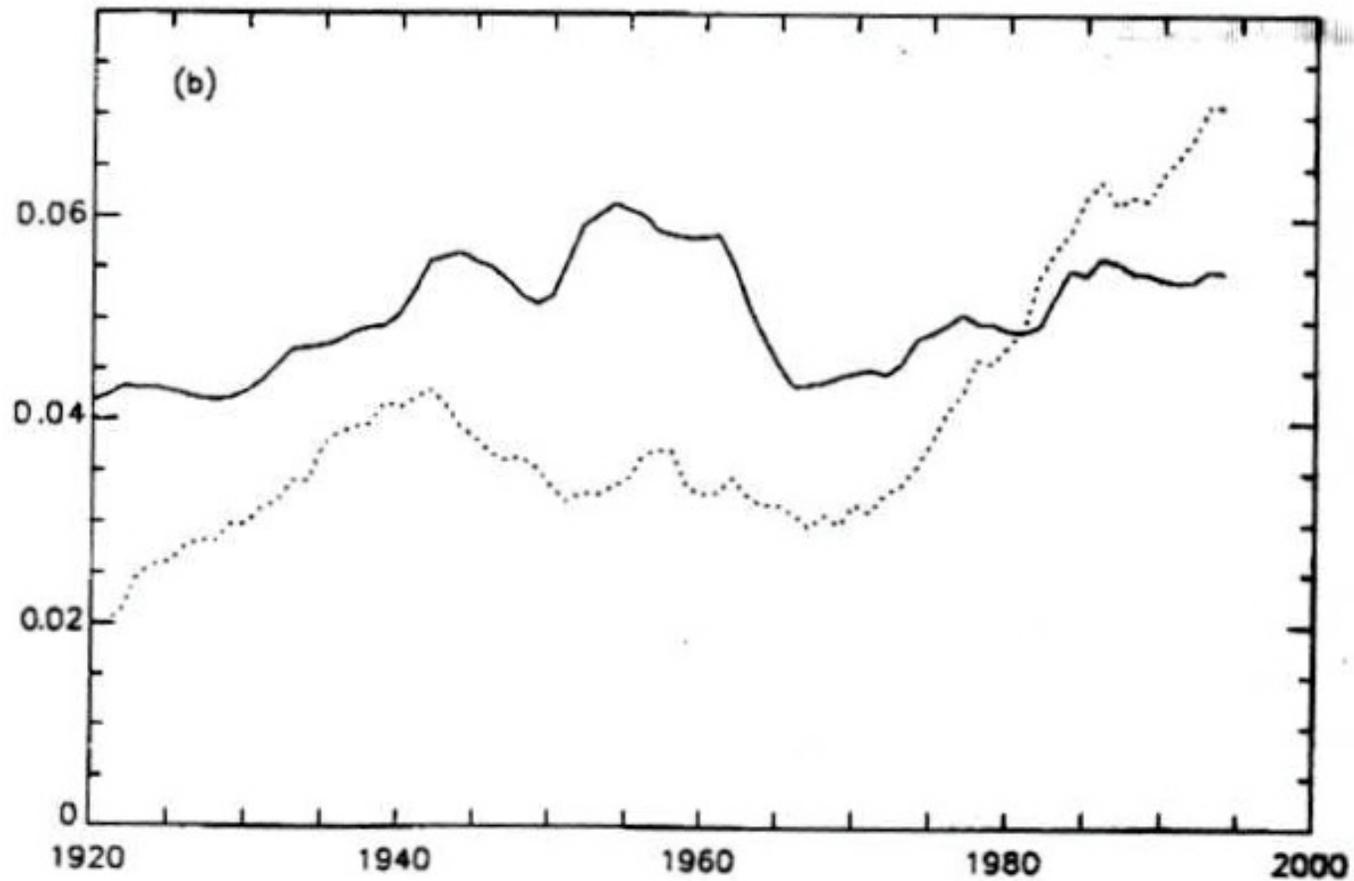
Consider these two direct quotations from two acknowledged authorities: How can they be consistent?



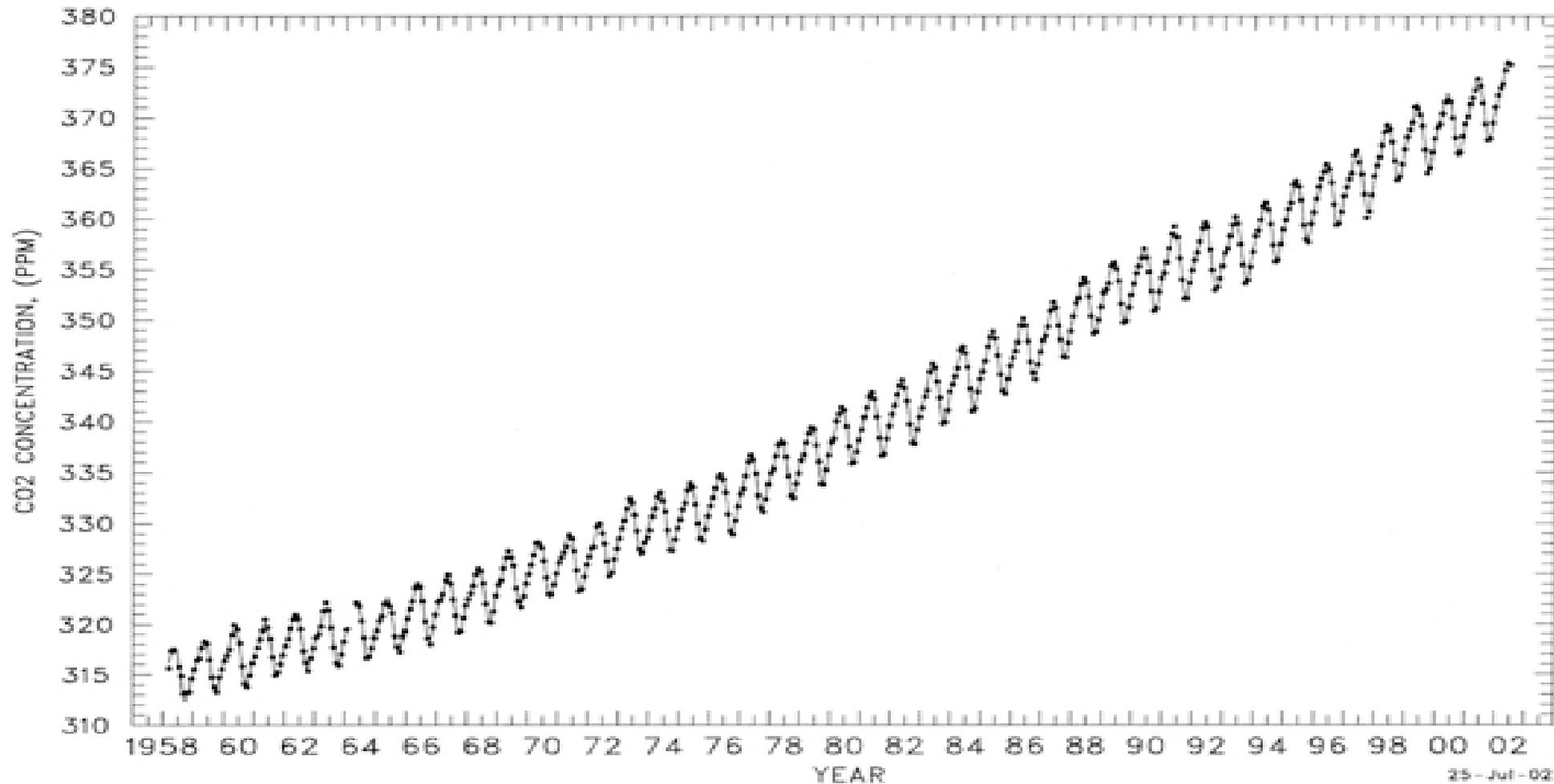
Global Temperatures 1860-2000 AD







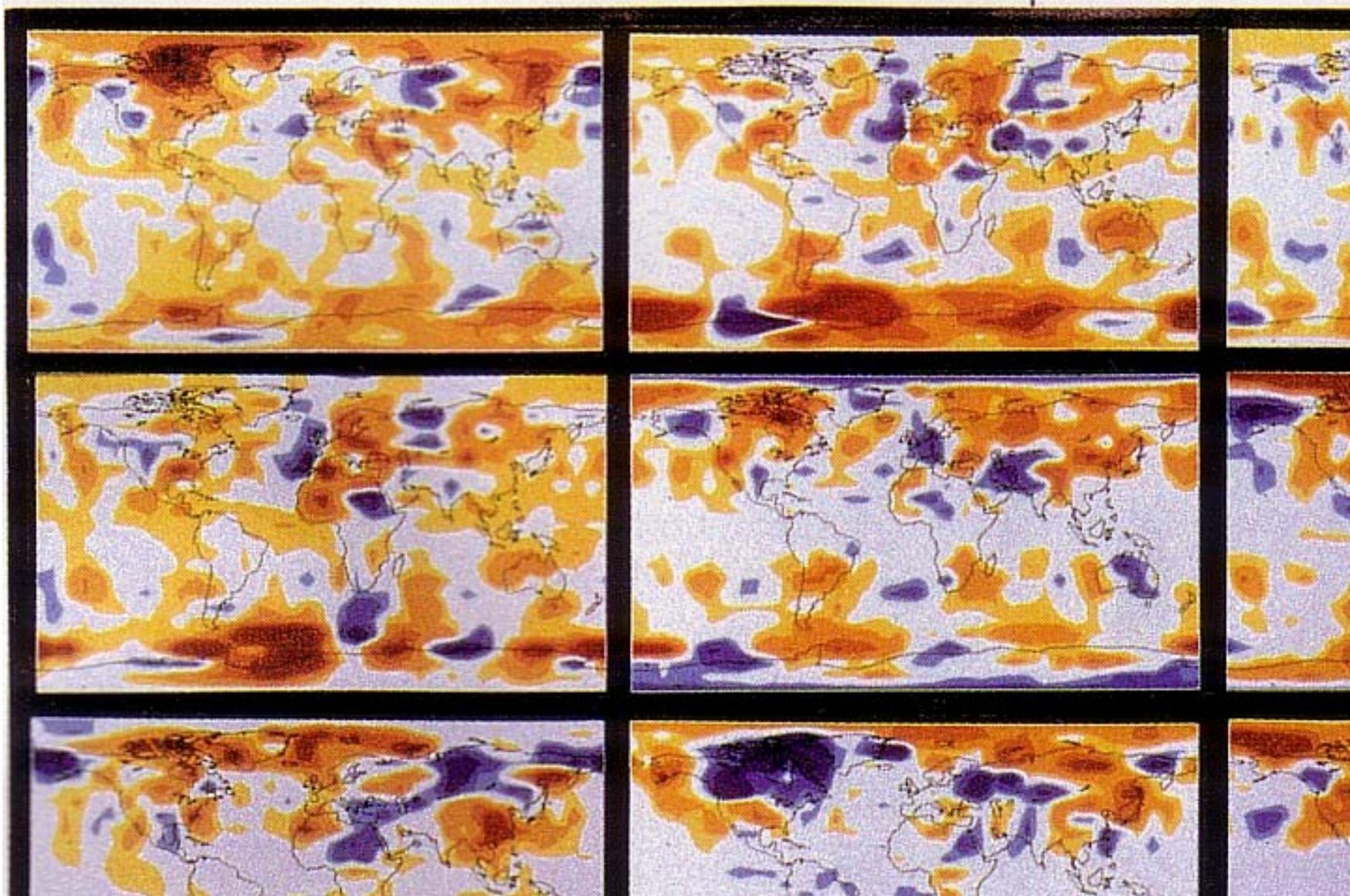
Solar activity vs. Temperature 1920-1990



Keeling's Curve:

Rising CO₂ in the atmosphere 1957 – 2001

Seasonal climate model (1992)





Pinatubo Eruption, 1991



Intergovernmental Panel on Climate Change

*Temperature is **very likely** to
increase by 1.4 to 5.8 °C by 2100...
a rate without precedent during at
least the last 10,000 years – 2001*



The Andes



Greenland



Antarctica



Wallace Broecker

*The North Atlantic Ocean
heat circulation system
can shut down.*

National Academy of Sciences Committee on
Abrupt Climate Change (2002)

*This new thinking is little known and
scarcely appreciated ...*

People literally don't like to think or talk about the subject. Their concern translates into frustration rather than support for action.

—Immerwahr, 1999



www.aip.org/history/climate